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FMPC SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

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FMPC
SPILL PREVENTION
CONTROL AND
COUNTERMEASURE PLAN

United States
Department of Energy
Feed Materials Production Center

1984

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1984

FMPC-2194
(Rev. to FMPC-2065)

FEED MATERIALS PRODUCTION CENTER

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

July 25, 1990

U. S. DEPARTMENT OF ENERGY
FEED MATERIALS PRODUCTION CENTER
P. O. BOX 398705
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Prepared by the

WESTINGHOUSE MATERIALS COMPANY OF OHIO

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CONTROLLED AMENDMENT LIST FOR SPCC

Amendment Number	Subject Of Amendment	Date	Pages Affected
0	FMPC - 2065 (required 3 year revision) (Total rewrite of SPPC Plan)	7/20/90	All Pages

CERTIFICATION OF THE FMPC SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN FOR OIL

"I, having reviewed the FMPC Spill Prevention Control and Countermeasures Plan, 1990 Revision, having examined the subject facility, and being familiar with 40 CFR Part 112 certify that, to the best of my knowledge, the amended FMPC SPCC Plan for oil has been prepared in accordance with good engineering practices."

David J. Brettschneider, P.E.
Printed Name Of Registered Professional Engineer

Signature Of Registered Professional Engineer
Registration Number E-040345
State OHIO
Date July 19, 1990

(Seal)

PROFESSIONAL ENGINEER

State of Ohio

David J. Brettschneider
Registration Number E-040345

Department of Energy approval at a level with authority to commit the necessary resources to implement the SPCC Plan as required under 40 CFR, Part 112.

Approved:
Gerald W. Westerbeck
Department of Energy

TABLE OF CONTENTS

Section	Title	Page
TABLE OF CONTENTS		i
LIST OF FIGURES		iii
LIST OF TABLES		iii
ACRONYMS AND ABBREVIATIONS		iv
DEFINITIONS		vi
1.0	SUMMARY	1-1
2.0	BACKGROUND INFORMATION	2-1
2.1	Process Operations Description	2-6
2.2	Site Storage Facilities Description	2-6
2.2.1	Tank Storage	2-8
2.2.2	Container Storage	2-11
2.3	Wastewater Treatment Facilities	2-13
2.3.1	Process Waste System	2-15
2.3.2	Sanitary Sewer System	2-20
2.3.3	Storm Sewer System	2-20
2.4	Oil Spill History	2-22
3.0	SPILL PREVENTION	3-1
3.1	Training	3-1
3.2	Training Programs	3-3
3.3	Labeling of Storage Tanks and Containers	3-4
3.4	Operating Procedures	3-6
3.5	Inspection of Storage Areas and Preventive Maintenance	3-11
3.6	Security	3-15
3.7	Best Management Practices (BMP) Committee	3-15
3.8	Containment Systems and Countermeasures	3-16
3.8.1	Primary Containment Systems	3-16
3.8.2	Secondary Containment Systems	3-16
3.8.3	Immediate Countermeasures	3-17
3.8.4	Secondary Countermeasures	3-19
3.9	Inventory and Level Controls	3-21
4.0	CONTINGENCY PLAN	4-1
4.1	Reporting The Spill To FMPC Response Authorities	4-1
4.2	Spill Corrective Actions	4-1
5.0	SPILL/RELEASE EVALUATION	5-1
5.1	Quantity of CWA Hazardous Substance, Oil, or PCB That Could be Released	5-1
5.2	Direction of Spills	5-1
5.3	Rate of Spill Flow	5-3

TABLE OF CONTENTS (Continued)

Section	Title	Page
6.0	IMPROVEMENTS	6-1
6.1	Improvements Since January 25, 1987	6-1
6.2	Planned Improvements	6-6
7.0	REFERENCES	7-1
APPENDIX A	REGULATORY BACKGROUND	A-1
APPENDIX B	REGULATORY CROSS REFERENCE	B-1
APPENDIX C	REGULATORY REPORTABLE QUANTITIES UNDER THE CLEAN WATER ACT (CWA)	C-1
APPENDIX D	ANALYSIS OF PRIMARY CONTAINMENTS	
D-1	Storage Tanks (CWA Hazardous Substance Tanks)	D-1
D-2	Storage Tanks (40 CFR Part 112 Tanks)	D-5
D-3	Underground Storage Tanks	D-7
D-5	Oil And PCB Container Storage	D-8
APPENDIX E	ANALYSIS OF SECONDARY CONTAINMENTS	
E-1	Storage Tanks (CWA Hazardous Substance Tanks)	E-1
E-2	Storage Tanks (40 CFR Part 112 Tanks)	E-3
E-3	Underground Storage Tanks	E-5
E-4	Loading And Unloading Facilities	E-6
E-5	Oil And PCB Container Storage	E-7
APPENDIX F	GRID PLATES	F-1
APPENDIX G	TRAVEL TIME ESTIMATES (HYDRAULIC CALCULATIONS)	G-1
APPENDIX H	UPGRADE OF SECONDARY CONTAINMENT SYSTEMS	H-1

LIST OF FIGURES

Figure	Title	Page
2-1	FMPC Area Map	2-2
2-2	Perspective Of FMPC	2-3
2-3	FMPC Storage Tank Locations And SPCC Master Grid	2-9
2-4	Wastewater Flow Diagram	2-14
3-1	Hazard Labeling Scheme	3-5
5-1	Storm Sewer System Manhole and Catchbasin Location Plan	5-2

LIST OF TABLES

Table	Title	Page
2-1	NPDES Effluent Discharge Limitations	2-16
2-2	DOE Guidelines For Radionuclide Discharge	2-19
3-1	Supporting Documents And Procedures	3-7
3-2	Inspection Schedule	3-12
5-1	Summary Of Travel Time Estimates	5-6
6-1	Spill Response Supplies for the FMPC Emergency Response Unit	6-2

ACRONYMS & ABBREVIATIONS

AEDO	Assistant Emergency Duty Officer
BDN	Biodenitrification Facility
BMPs	Best Management Practices
BSL	Biodenitrification Surge Lagoon
CB	Catchbasin
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CFS	Cubic Feet Per Second
CWA	Clean Water Act
DOE	Department of Energy
DOT	Department of Transportation
EC	Environmental Compliance
EDO	Emergency Duty Officer
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERT	Emergency Response Team
ETS	BDN Effluent Treatment System
FML	Flexible Membrane Liner
FMPC	Feed Materials Production Center
FWPCA	Federal Water Pollution Control Act
GMR	Great Miami River
GPM	Gallons Per Minute
HNO_3	Nitric Acid
HNT	High Nitrate Holding Tank
H_3PO_4	Phosphoric Acid
IRS&T	Industrial, Radiological, Safety, & Training
JPIC	Joint Public Information Center
MER	Minor Event Report
mg/l	Milligrams Per Liter
MGY	Million Gallons Per Year
MH	Manhole
MOS	Maintenance Operating System
MSDS	Material Safety Data Sheets
NA	Not Applicable
NaOH	Sodium Hydroxide

ACRONYMS & ABBREVIATIONS

NFPA	National Fire Protection Association
NH_4OH	Ammonia Hydroxide
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
pCi/l	Picocuries Per Liter
RCRA	Resource Conservation and Recovery Act
RQ	Reportable Quantity
SOP	Standard Operating Procedure
SPCC	Spill Prevention Control and Countermeasures
SSLS	Storm Sewer Lift Station
STP	Sewage Treatment Plant
SWRB	Storm Water Retention Basin
TBP	Tributyl Phosphate
TSCA	Toxic Substances Control Act
UF_4	Uranium Tetraflouride
UNH	Uranyl Nitrate
UO_3	Uranium Oxide
UOR	Unusual Occurrence Report

Definitions

Some of the terms used or referred to in the Spill Prevention Control and Countermeasure Plan are defined below:

Assistant Emergency Duty Officer (AEDO) - Field commander of the FMPC emergency response activities.

Best Management Practices (BMPs) - Schedules of activities, maintenance procedures, prohibitions of practices, and other management practices taken to prevent or reduce the pollution of U. S. Waters. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Container - Any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

Contingency Plan - For the purposes of this document, a contingency plan is a written document that sets forth policies and procedures for responding to incidents which could threaten human health or the environment.

CWA Hazardous Substance - See "Hazardous Substance" definition.

Dike - An embankment or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

Discharge - Means the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying or dumping into or on any land or water not authorized by the EPA.

Discharges Of Oil - Defined in 40 CFR Part 110.3 [in compliance with Statue Section 311(b) of the Clean Water Act], as discharges that: "(a) violate applicable water quality standards or (b) cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines." (40 CFR, Part 110)

Emergency Duty Officer (EDO) - Trained member of FMPC management responsible for the management and oversite of FMPC emergency response activities until the FMPC Emergency Operations Center (EOC) is declared operational.

Facility Owner - The person designated as building custodian or the senior supervisor onshift in a plant.

Flammable Liquid - A liquid having a flash point below 100 F (37.8 C) and a vapor pressure not exceeding 40 psia (absolute) at 100 F.

Hazard Label - A visual indicator consisting of easily recognized and understood markings which identify the tank and process equipment contents and indicates the degree of hazard.

Hazardous Substance - For the purposes of this document, a hazardous substance is designated as any toxic pollutant or any substance listed under Statute Section 307(a) or 311(b)(2)(a) of the Federal Water Pollution Control Act (FWPCA). All hazardous substances for purposes of this document are listed in Appendix C of this document.

Hazardous Waste - A waste material exhibiting the characteristics of ignitability, corrisibility, reactivity, or toxicity or listed in 40 CFR Part 261 (RCRA) or identified in applicable state regulations.

Manhole 175 - Monitoring of FMPC wastewater discharges to the Great Miami River occurs just downstream of MH 175. The term MH 175 is used synonymously to refer to the adjacent monitoring station.

Mixture - Any combination of two or more elements and/or compounds in solid, liquid, or gaseous form, except where such substances have undergone a chemical reaction so as to become inseparable by physical means.

Navigable Waters - Water as defined in Section 502 (7) of the Clean Water Act.

NPDES Permit - A National Pollution Discharge Elimination System permit authorization, license, or equivalent control document used by the Environmental Protection Agency (EPA) or an "approved State" to implement the requirements of 40 CFR, Part 122 and Parts 123 and 124.

Oil - Oil of any kind or in any form including but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil. (40 CFR, Part 110)

PCB Contaminated Electrical Equipment - Any electrical equipment, including but not limited to, transformers, capacitors, circuit breakers, reclosures, voltage regulators, switches, electromagnets, and cable that contain 50 ppm or greater PCB but less than 500 ppm PCBs. Oil filled electrical equipment other than circuit breakers, reclosures, and cable whose PCB concentration is unknown must be assumed to be PCB-contaminated electrical equipment. (40 CFR, Part 761)

PCB Transformer - Any transformer that contains 500 ppm PCB or greater. (40 CFR, Part 761)

Primary Containment - The tank, container or other device used for holding hazardous substances, hazardous wastes, oils, PCBs.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of closed containers in an unpermitted area).

Reportable Quantities - Quantities that may be harmful as set forth in Sections 307 and 311 of the Clean Water Act. The discharge of a reportable quantity of a substance is a violation of the FWPCA and must be reported to EPA.

Secondary Containment - Any device or facility designed to capture the accidental release or discharge of a liquid material and maintain positive control of the substance.

Secondary Containment Volume - The actual volume sufficient to contain the capacity of the largest single container or tank in the drainage system. If the drainage area is subject to precipitation, a reasonable allowance for its accumulation, based on local weather conditions and plant operation, shall be provided over and above the volume necessary to contain the largest single tank or container.

Sheen - An iridescent appearance on the surface of the water. (40 CFR, Part 110)

Sludge - An aggregate of oil or oil and other matter of any kind, in any form other than dredged soil, having a combined specific gravity equivalent to or greater than that of water. (40 CFR, Part 110)

Tank - For the purposes of this document, a tank is a stationary device that exceeds 85 gallons and is designed to contain an accumulation of regulated substances which is constructed of non-earthen materials that provide structural support. Tanks are classified as Above Ground Storage Tank or Underground Storage Tank. An Underground tank has 10% or more of the storage volume below ground.

Spill - A specific type of release usually involving a liquid. However the term is often used synonymously with "release."

Transfer Facility - Any transportation related facility including loading docks, parking areas, storage areas, and other similar areas where shipment of hazardous substances/wastes are held during the normal course of transportation.

1.0 SUMMARY

The Spill Prevention Control and Countermeasure (SPCC) Plan is specifically mandated by the Code of Federal Regulations (CFR) Title 40, Part 112, for owners or operators of facilities having a potential for discharge of harmful quantities of oils to navigable waters. Similar provisions mandated by 40 CFR, Part 761 applies to the discharge of substances contaminated with polychlorinated biphenyls (PCBs). SPCC Plans are not required to cover hazardous substances. Although not part of the SPCC plan as required by 40 CFR, Part 112, discussion of the preventative systems for hazardous substances as designated under the Clean Water Act (CWA), hereinafter referred to as a CWA hazardous substance, have been included in this document because of good management practices and the similarity of these systems to those for oil. Only those tanks/containers storing a Reportable Quantity (RQ) or more of a CWA hazardous substance are discussed in this document. CWA hazardous substances in Appendix C stored in quantities less than an RQ are addressed in the Feed Materials Production Center (FMPC) Best Management Practices (BMP) Plan (FMPC/SUB-011). This document does not include hazardous waste.

The Spill Prevention Control and Countermeasure Plan consists of two parts: 1) owner/operator plans for preventing an unintentional discharge of oil, PCB or CWA hazardous substance RQ to a navigable water, and 2) owner/operator response in the event of an unintentional discharge of oil, PCB, or CWA hazardous substance from a primary or secondary containment system to prevent it from going to a navigable water. While both parts are discussed in this document, much of the Part 2 response information discussed herein refers to other FMPC documents.

Title 40 CFR, Part 112, requires that the Department of Energy (DOE) (owner/operator) complete a review and evaluation of the SPCC Plan at least once every three years. Also, owners/operators of facilities subject to 40 CFR, Part 112.3(a), (b), or (c) shall amend the SPCC Plan for such a facility in accordance with 40 CFR, Part 112.7 whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential for a discharge into or upon navigable waters of the United States or adjoining shorelines. Such amendments shall be fully

implemented as soon as possible, but not later than six months after such a change occurs. Accordingly, this document has been issued in a loose-leaf binder so that amendments can be inserted as appropriate. A controlled amendment list for this SPCC Plan is included in the front of the SPCC Plan so that these amendments can be recorded.

Section 2 of this report provides background information on the Feed Materials Production Center (FMPC), located in Fernald, Ohio. Included are descriptions of process operations, site storage facilities, wastewater treatment facilities (process waste system, sanitary sewer system, storm sewer system) and a oil spill history. The subjects covered under site storage facilities include tank storage and container storage. Container storage is further subdivided into oils and CWA hazardous substances, PCB-contaminated oils, process wastes, and Resource Conservation and Recovery Act (RCRA) hazardous wastes. A site plan drawing of the FMPC indicates the location of tank and container storage areas containing oils, PCBs and CWA hazardous substances stored in RQs (as defined under Sections 307 and 311 of the CWA).

Section 3 covers the FMPCs Spill Prevention Program. Subjects discussed in this section are personnel training, labeling of storage tanks and containers, operating procedures, inspection of storage areas and preventive maintenance (includes an inspection schedule of equipment and storage areas), security at the FMPC, Best Management Practices (BMP) Committee, containment systems and countermeasures, and inventory and level controls. FMPC site policy and procedures are listed in Table 3-1 and are referenced throughout this section. These documents are available at various locations throughout the FMPC including the facility owners' offices, security, training department, and Emergency Operations Center (EOC).

Section 4 presents the SPCC Contingency Plan. The document titled "FMPC Emergency Plan" details the procedures to be followed at the FMPC in the event of an accident (spill) or emergency and is the document which governs the spill response actions. However, a discussion of the subjects in the FMPC Emergency Plan is reiterated in Section 4 of the SPCC Plan. Also, included in this section are the procedures for reporting of a spill or emergency at the FMPC. As in Section 3, several FMPC documents are referenced throughout Section 4 which are available at various locations throughout the FMPC.

The SPCC Plan also includes a prediction of the total quantity of a substance from a potential release, the flow path of a release, and an evaluation of the spill travel time. This Spill/Release Evaluation is presented in Section 5.

Section 6 summarizes some of the improvements made since the issuance of the FMPCs SPCC Plan (FMPC - 2065) on January 25, 1987, and improvements that are planned.

Major revisions to this document since issuance of the previous SPCC Plan (FMPC-2065) on January 25, 1987, are:

1. Eliminated much of the information required for a SPCC Plan but provided in other FMPC documents (i.e. FMPC Emergency Plan, etc.), only referencing these documents with brief discussion of what is contained in them. This was done for two reasons: 1) to avoid having to update the SPCC plan if and when changes to these documents are made, and 2) to emphasize that the procedure being discussed is being governed by the document being referenced.

2. Added Appendix F (grid plates) to show more details of the individual storage tanks listed in Appendix D.

3. Added Appendix E which presents tabulated data and an analysis of the existing secondary containment areas.

4. Added a "Controlled Amendment List for SPCC" to indicate any amendments to the plan after it is issued and certified. The amendment sheet will indicate any changes required by 40 CFR, Part 112.5. Also, the amended SPCC Plan has been issued in a loose leaf binder so that portions of this document can be amended as needed.

5. Added additional tabulated data to Appendix D "Analysis of Primary Containments." This data provides information on such items as level controls, material of tank construction, compatibility of tank materials, etc.

2.0 BACKGROUND INFORMATION

The FMPC was constructed and began operations in the early 1950's. Its main function was to produce purified uranium metal and uranium compounds for use at other Department of Energy (DOE) facilities. A small amount of thorium processing has been conducted at the FMPC in the past. Associated with the production of uranium at the FMPC are numerous buildings and plants, each of which performs a specific function related to uranium processing. This facility has the capability of converting a variety of feeds to pure uranium metal and compounds. The facility is primarily engaged in the production of uranium materials in different physical forms through a variety of chemical, foundry and machining operations. The principal production operations during recent years consisted of metal fabrication with periodic small campaigns to process accumulated plant residues and miscellaneous feed materials obtained from other DOE facilities. Environmental restoration, cleanup efforts and waste management comprise the majority of the work being conducted at the FMPC at the present time.

The FMPC is owned and operated by the DOE. It is located near the unicorporated town of Fernald, Ohio approximately 20 miles (32 kilometers) northwest of Cincinnati. The production facilities cover approximately 136 acres in the center of a 1050 acre site. The site is bounded on the south by Willey Road, on the west by Paddy's Run Road, on the north by farmland and State Route 126, and on the east by a dairy farm. Figure 2-1 shows a map of the area surrounding the FMPC. A FMPC Site Plan perspective is shown in Figure 2-2.

The FMPC stores and uses a variety of oil products and other organic and inorganic chemical constituents considered to be hazardous. With the exception of kerosene and tributyl phosphate (TBP), most of the oils and oil derivatives maintained at the site are used in lesser quantities as lubricants, coolants, degreasing agents, hydraulic fluids, cutting oils, and fuels. Accordingly, the FMPCs SPCC Plan has been prepared to meet the requirements of the regulations imposed by 40 CFR, Part 112, Part 761, and CWA hazardous substances under Sections 307 and 311 of the Clean Water Act (CWA). The FMPC is required by 40 CFR, Part 112, to prepare a SPCC Plan since it has numerous above ground storage tanks that have a combined capacity of over

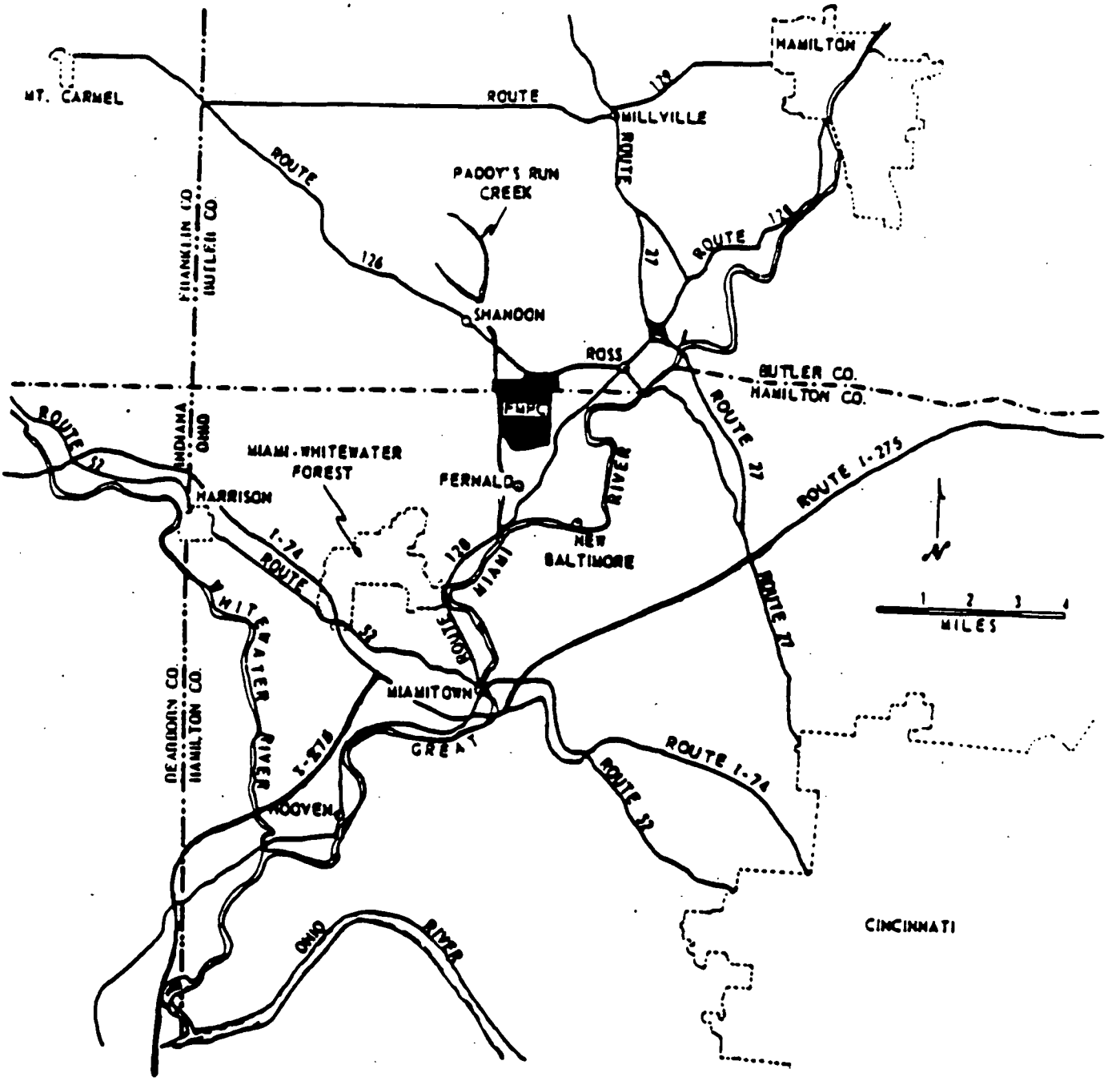
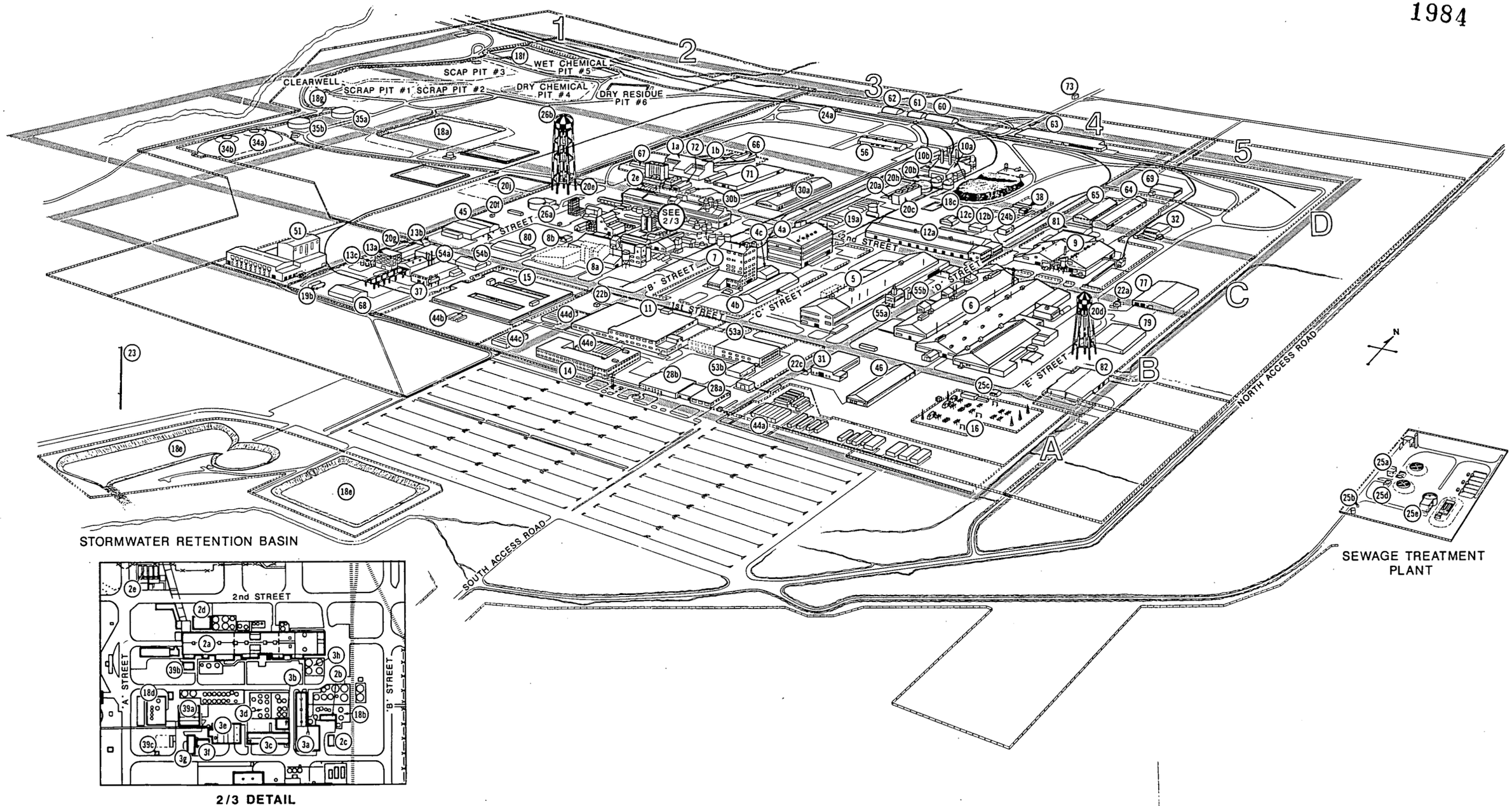


FIGURE 2-1: FMPC AREA Map



2/3 DETAIL

See Following Page For Building Identification

Figure 2-2: Perspective of FMPC

(1A) BUILDING IDENTIFICATION

Building I.D. No.	Grid Coordinates	Title
00	C-3	General
1a	C-3	Preparation Plant
1b	B-3	Plant 1 Storage Building
2a	B-3	Ore Refinery Plant
2b	B-3	Lime Handling Building
2c	B-3	Bulk Lime Handling Building
2d	C-3	Metal Dissolver Building
2e	C-3	NFS Storage and Pump House
3a	B-3	Maintenance Building
3b	B-3	Ozone Building
3c	B-3	Control House
3d	B-3	NAR Towers
3e	B-3	Hot Raffinate Building
3f	B-3	Digestion Fume Recovery
3g	B-3	Refrigeration Building
3h	B-3	Refinery Sump
4a	B-4	Green Salt Plant
4b	B-4	Plant 4 Warehouse
4c	B-4	Plant 4 Maintenance Building
5	B-4	Metals Production Plant
6	B-5	Metals Fabricating Plant
7	B-4	Plant 7
8a	B-3	Recovery Plant
8b	B-3	Maintenance Building
9	C-5	Special Products Plant
10a	D-4	Boiler Plant
10b	D-4	Boiler House Maintenance Building
11	A-4	Service Building
12a	C-4	Maintenance Building (Main)
12b	C-4	Cylinder Storage Building
12c	C-4	Lumber Storage Building
13a	A-3	Pilot Plant Wet Side
13b	A-3	Pilot Plant Maintenance Building
13c	A-3	Sump Pump House
14	A-4	Administration Building
15	A-3	Laboratories
16	A-5	Main Electrical Substation
18a	C-2	Surge Lagoon
18b	B-3	General Sump
18c	C-4	Coal Pile Runoff Basin
18d	B-3	Biodenitrification Towers
18e	*	Storm Water Retention Basin
18f	D-1	Pit 5 Sluice Gate
18g	C-1	Clearwell Pump House
19a	C-4	Metal Tank Farm
19b	A-3	Pilot Plant Ammonia Tank Farm
20a	C-4	Valve/Control Building
20b	D-4	Filter/Chemical Building
20c	C-4	Cooling Towers
20d	B-5	Elevated Storage Tank (Potable H_2O)
20e	B-3	Well House
20f	B-3	Well House
20g	A-3	Well House
20h	D-4	Process Water Storage Tank
20j	B-2	Lime Slurry Pits
22a	B-5	Gas Meter Building
22b	A-3	Sewer Lift Station
22c	A-5	Truck Scale
23	*	Meteorological Tower
24a	D-3	Railroad Scale House
24b	C-4	Railroad Engine Building
24c	*	Chlorination House
25b	*	MH #175
25c	A-5	Sewage Lift Station Building
25d	*	U.V. Disinfection Building
25e	*	Digester Control House
26a	B-3	Pump House - H.P. Fire Protection
26b	B-3	Fire Protection Storage Tank
28a	A-4	Security Building
28b	A-4	Human Resources Building
30a	C-3	Chemical Warehouse
30b	C-3	Drum Storage Warehouse
31	A-5	Engine House - Garage
32	D-5	Magnesium Storage
34a	B-1	K-65 Storage Tank - North
34b	B-1	K-65 Storage Tank - South
35a	C-1	Metal Oxide Storage Tank - North
35b	B-1	Metal Oxide Storage Tank - South
37	A-3	Pilot Plant Annex
38	D-4	Propane Storage
39a	B-3	Incinerator Building
39b	B-3	Warehouse
39c	B-3	Incinerator Bulding Sprinkler Riser House
44a	A-5	Trailer Complex - 6-Plex - East
44b	A-4	Trailer Complex - 3-Plex
44c	A-3	Trailer Complex - 7-Plex - South
44d	A-3	Trailer Complex - 7-Plex - North
44e	A-4	Trailer Complex - 10-Plex
45	A-3	Building 45
46	A-5	Heavy Equipment Garage
51	A-2	UF_6 to UF_4 Reduction Facility II
53a	A-4	Health, Safety & Production Control Building
53b	A-4	In-Vivo Building
54a	A-3	UF_6 to UF_4 Reduction Facility I
54b	A-3	Warehouse/Weather Shelter
55a	B-4	Slag Recycling Plant
55b	B-4	Slag Recycling Pit/Elevator
56	D-3	CP Storage Warehouse
60	D-3	Quonset Number 1
61	D-3	Quonset Number 2
62	D-3	Quonset Number 3
63	D-4	KC-2 Warehouse
64	D-5	Plant 9 Warehouse
65	D-5	Plant 5 Warehouse
66	C-3	Drum Reconditioning Building
67	C-3	Plant 1 Storage Building
68	A-3	Pilot Plant Warehouse
69	D-5	Decontamination Building
71	C-3	General In-Process Storage Warehouse
72	C-3	Drum Storage Building
73	*	Fire Brigade Training Center Building
77	C-5	Finished Products Warehouse
78	*	New D&D Facility (On Hold)
79	B-5	Plant 6 Warehouse
80	B-3	Plant 8 Warehouse
81	C-5	Plant 9 Warehouse
82	B-5	Receiving & Incoming Materials Inspection Area

* Outside of Perimeter Security Fence

NOTE: Any Unidentified Area is Referred to as 00 General

100,000 gallons of oil and oil derivatives (petroleum products). The regulations require a SPCC Plan to be prepared for the site if it has a total above ground storage capacity exceeding 1,320 gallons (and no singe above ground tank has a capacity greater than 660 gallons). CWA hazardous substances under Sections 307 and 311 of the CWA are listed in Appendix C. PCBs referenced by 40 CFR, Part 761 are also listed in Appendix C with the exception of oil derivatives and oil products (petroleum products).

The FMPC is located in the Great Miami River Basin. Natural drainage from the site is south and westward towards Paddy's Run, a tributary of the Great Miami River. As shown in Figure 2-1, Paddy's Run originates north of the plant and flows southward on the west side of the plant. Flow in Paddy's Run is intermittent and is sustained primarily during the seasonally wet period from January to May. During the remainder of the year it can be considered a dry stream bed with the exception of occasional flash flows of a few hours duration during and following heavy rains.

The FMPC has three separate and independent systems used for the collection, processing, and discharging of process wastewaters, sanitary sewage, and storm water runoff. The process wastewater system is designed to collect and treat liquid process waste streams prior to discharge to the Great Miami River. The sanitary sewer system collects raw sewage from the FMPC buildings and transports it to the Sewage Treatment Plant for processing before being discharged to the river via Manhole 175 (MH 175). The storm sewer system is designed to collect plant runoff and transfer it to the Storm Water Retention Basin (SWRB) for settling of solids before it is discharged to the Great Miami River via MH 175.

The following sections describe the FMPC process operations, storage facilities, wastewater treatment facilities (including site drainage system) and Oil Spill History, in order to provide the reader with sufficient insight into plant operations to understand the accompanying Spill Prevention Control and Countermeasure Plan.

2.1 PROCESS OPERATIONS DESCRIPTION

A wide variety of chemical and metallurgical processes have been employed at the FMPC in the conversion of recycled materials to either uranium metal derbies or uranium ingots.

Uranium oxides are produced by dissolving recycled materials in nitric acid to produce a Uranyl Nitrate (UNH) feed solution for solvent extraction purification. Purified UNH solution is concentrated by evaporation and then thermally denitrated to orange oxide (UO_3). Nitrogen oxides released during the dissolution and denitration steps are captured, converted to nitric acid and reused in the process. UO_3 is converted to uranium tetraflouride (UF_4) (commonly referred to as green salt) for reduction to metal at the FMPC. Recoverable scrap materials generated in FMPC operations are reclaimed for reuse by either furnacing or wet chemical hydrometallurgical processing.

Uranium metal derbies are produced by the reduction of UF_4 with magnesium metal. Some derbies are shipped directly to customers and others are vacuum induction melted along with scrap uranium metal to produce uranium ingots in a variety of sizes and shapes. Most ingots or billets are surface machined before being shipped to a off-site location. Round ingots are surface machined then center-bored for subsequent extrusion at an off-site location. Certain extrusions are returned to the FMPC to undergo heat treatment and fabrication into target elements for DOE reactors at the Savannah River Site.

As with any large manufacturing plant, these processes produce wastes which must be handled properly. The following sections describe storage areas and disposal/treatment methods for these wastes and the plans for spill prevention control and countermeasures in the event of a spill.

2.2 Site Storage Facilities Description

Sections 307(a) and/or 311(b)(2) of the Clean Water Act is the statutory source for the listing of CWA hazardous substances in Appendix C. Inventories of some of these various CWA hazardous substances are maintained at the FMPC in amounts greater than their respective reportable quantities (RQs) as

specified by Sections 307 and 311 of the CWA; also presented in Appendix C. Appendix D is a listing of the primary containments (tanks, equipment or containers) for the CWA hazardous substances stored in quantities ≥ RQs, along with the primary containments for oil and oil derivatives (petroleum products), PCB-contaminated equipment and PCB-contaminated wastes.

Appendix D is subdivided into categories of storage tanks for (or equipment containing) oil and oil derivatives (40 CFR, Part 112 tanks), storage tanks for CWA hazardous substances with quantities ≥ RQs (CWA hazardous substance tanks under Sections 307 and 311 of the CWA), and containers for oil and PCB materials (40 CFR, Part 112 and 761 containers). Note that no tanks exist for PCB materials and, to the best of our knowledge, no containers of CWA hazardous substances exist which have individual capacities exceeding their respective RQ specified in Appendix C. Included in Appendix D is information regarding the substance stored in each primary containment, its capacity, location identification number, material of construction, and other pertinent information.

Secondary containment systems consisting of dikes or curbs constructed out of concrete surround most of the primary containments. In addition, many of these concrete containment areas are lined with a material, such as acid brick or stainless steel, that is resistant to the oils or CWA hazardous substances stored in the primary container(s) for that area. Additional secondary containment systems consist of steel tanks.

Appendix E is a listing of the secondary containments at the FMPC. As was done for Appendix D, Appendix E is subdivided into groupings for CWA hazardous substance tanks, oil and oil derivative tanks, and oil and PCB containers. Note that some secondary containment areas contain tanks for both CWA hazardous substances and oil or oil derivatives. Also, a separate grouping is provided for underground storage tanks. Included in Appendix E is information regarding the diked area secondary containment capacity, construction, location, the capacity of the largest primary containment within the diking, and other pertinent information.

Appendix E also provides a listing of the loading and unloading stations at the FMPC where SPCC substances are handled. Included in this listing is information regarding the capacity of the secondary containment capacity provided at each station, the capacity of the largest tanker or compartment of a tanker using the station, the location of the station and other pertinent information.

Figure 2-3 shows the general location of primary and secondary containment systems and the loading and unloading stations at the FMPC. Figure 2-3 also serves as a key plan to detailed enlargement of specific area grid plates which can be found in Appendix F. The first column of Appendices D and E lists the building number associated with each primary or secondary containment and each loading or unloading station. The second column lists the locator file number corresponding to a location indicated on Figure 2-3 and the specific enlarged grid plate in Appendix F where each item can be viewed more clearly.

2.2.1 Tank Storage

Storage tanks are located throughout the FMPC facility. Identified in this SPCC Plan are those tanks or equipment capable of containing petroleum products for plant operation; oil cooled equipment; raw materials for use in process operations; in-process materials or materials awaiting further processing; by-products of the process operations; and waste streams. Design parameters for these tanks are presented in Appendix D. These parameters include tank identification (and location); service (material stored); capacity of the tank in gallons; presence of level control; material of tank construction; evaluation of tank construction; presence/absence of inventory control; visual inspection; heating coil information; and year of tank installation. Many of the CWA hazardous substances and oils that are stored in the various storage tanks located throughout the FMPC are transferred by process lines from one of the few storage tanks that receive these substances or oils at one of the eleven (11) main Loading and Unloading areas shown on Figure 2-3 and/or the enlarged specific area grid plates in Appendix F; and designated by a 100 number.

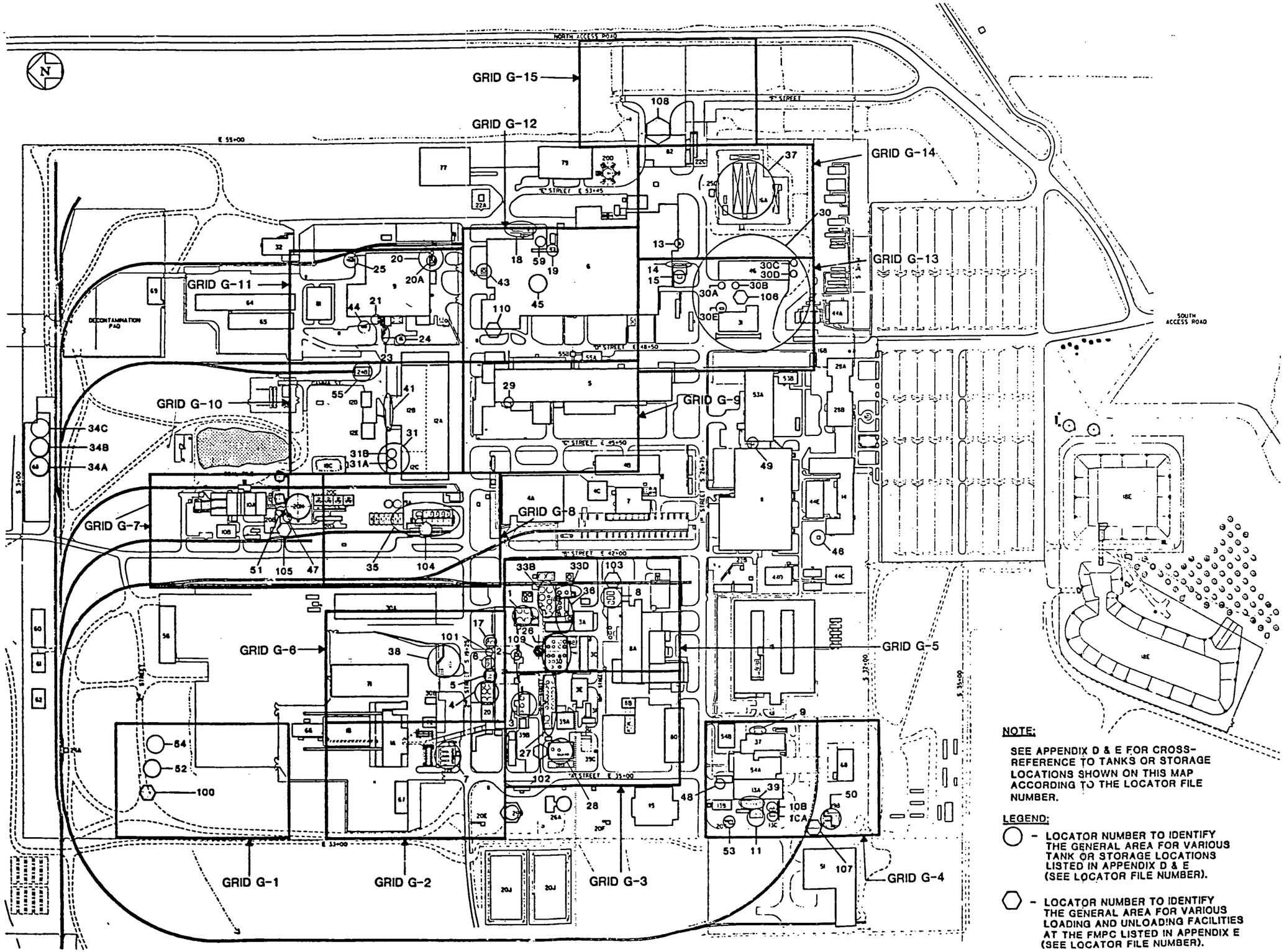


FIGURE 2-3: FMPC STORAGE TANK LOCATIONS AND SPCC MASTER GRID

Petroleum products, such as gasoline, diesel fuel, and No. 2 heating fuel, are stored at various locations throughout the FMPC. Gasoline and diesel fuel are used in the various FMPC vehicles (i.e., cars, trucks, fire engines, lawn movers, etc.) and is supplied from these storage tanks. Lubricating oil is also used in many of these vehicles. Three (3) No. 2 heating fuel tanks that supply oil for the emergency standby generators are also located at the FMPC. These three tanks are located at the northwest corner of the Administration Building, the northwest corner of the Health and Safety Building and the Number 3 Groundwater Well Pumphouse located by the Pilot Plant.

Oil cooled equipment such as the Cross transfermatic in Plant 6, milling machines located in Plant 6 and 9, and saws located in Plants 5, 6 and 9 are employed at the FMPC. These operations use coolants whose main constituent is oil. Waste streams from these operations are neutralized and treated for oil removal in Plant 6 Water Treatment before being pumped to the General Sump.

Electrical power is delivered to the FMPC plant via a loop feed by Cincinnati Gas and Electric Company at 132,000 volts. This power is transformed to 13,200 volts by three 10,000 kilovolt-ampere (kVA) forced-air-cooled transformers in the main substation for distribution to the plant users. Each of these transformers is filled with oil and is therefore within the scope of this SPCC Plan. Also, an oil filled circuit breaker is associated with each of the three transformers at the main electrical substation. These units are included in Appendix D and Appendix E with the subsection addressing Storage Tanks (40 CFR, Part 112 tanks).

Raw material tanks contain CWA hazardous substances such as Nitric Acid (HNO_3), Sodium Hydroxide (NaOH), barium carbonate, sulfuric acid, aluminum sulfate, 1-1-1- Trichloroethane, potassium carbonate, magnesium oxide, calcium oxide, hydrated alumina, and lithium carbonate. Nitric Acid is used at the FMPC to digest uranium bearing residues to allow separation of the uranium from any impurities.

By-product tanks contain substances such as dilute Nitric Acid. Dilute Nitric Acid is a by-product of the Nitric Acid Recovery System, which recovers NOx from the Digestion and Denitration operations of the Refinery. A mixture of

Kerosene and Tributyl Phosphate (TBP) is used in the Refinery (Plant 2/3) for the organic extraction of uranium. Sodium hydroxide is used in the neutralization of liquids before filtering in Plant 6 and Plant 8.

In-process tanks contain substances such as Uranyl Nitrate (a mixture of nitric acid and uranium). A substantial quantity of Uranyl Nitrate is in storage at the Refinery waiting for further purification to be produced as Uranium Oxide (UO_3).

Waste streams produced from various processes are in storage tanks located throughout the FMPC. The Zirnlo process in Plant 9 produces such waste streams as hydrofluoric acid and lime slurry. These by-products are the result of the copper decladding of the uranium core elements. Other waste streams are the result of such operations as nitric acid pickling of uranium, derbies, ingots, etc. in Plants 6 and 9.

2.2.2 Container Storage

In addition to containers of oils and CWA hazardous substances used in FMPC plant processes, in-process and wastes considered to be hazardous by the various federal regulations such as Resource Recovery Conservation Act (RCRA), Toxic Substances Control Act (TSCA), SPCC, etc. are stored (usually in drums) at many locations throughout the FMPC. The contents of the drums are identified using the FMPC Lot Marking and Color Coding System. This marking system identifies the FMPC plant that the material came from, the enrichment of uranium and thorium materials, and the material (ex. fines, chips, briquettes, scrap metal, etc.). Drummed CWA hazardous substances and process wastes stored at the facility are also identified using Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and Environmental Protection Agency (EPA) guidelines. The following paragraphs describe the drummed substances stored at the FMPC.

2.2.2.1 Oils and CWA Hazardous Substance Containers

Drummed oils and CWA hazardous substances for use in plant processes are received, stored, transferred, and used at various operations throughout the FMPC facility. The drums are received at the main shipping area, (Loading and

Unloading Station 108, as shown on Figure 2-3). These substances are then transferred to various designated storage areas according to their physical, chemical, and fire hazard properties in accordance with accepted National Fire Protection Association (NFPA) and DOE standards as referenced in NFPA 30, 49, 321, and 325M. The substance is then distributed to the end-user facilities in quantities sufficient to maintain operations. Note that only drums containing oil or oil derivatives appear in Appendix D and Appendix E. All CWA hazardous substances received in drums are of a quantity less than RQs and, as such, fall under the jurisdiction of the FMPCs BMP Plan and are not a part of this SPCC Plan.

2.2.2.2 PCB-Contaminated Oil Containers

PCB-contaminated electrical equipment, which has been removed from service, and PCB contaminated waste oils are stored in bay 7 of the KC-2 Warehouse (refer to Figure 2-3). The KC-2 Warehouse is a covered RCRA storage facility with east and west walls and fencing on the north and south ends and curbing to contain an accidental spill if one would occur. Approximately thirty-one (31) drums of PCB-contaminated material are currently stored in the diked containment area of bay 7 of the KC-2 Warehouse.

2.2.2.3 Process Waste Containers

Some process wastes generated at the FMPC are also drummed. This includes low-level radioactive wastes such as raffinate, slag leach filter cake, and magnesium fluoride. Many of these substances are temporarily stored before being processed to oxidize and remove water before shipment for final disposal at an approved off-site disposal facility. Various forms of process materials and recoverable residues are temporarily stored in drums while awaiting further processing at the FMPC. Other materials in the drum inventory include: clothing, gloves, and other solid wastes with a low uranium content awaiting disposal; degreasing solvents; asbestos-containing wastes generated from maintenance and restoration activities; waste machine oils and oil sludges with low-level radioactive contamination; and wastes containing PCBs, some of which also contain uranium and degreasing solvents.

Drums containing waste oils contaminated with RCRA constituents are, as described above for PCB-contaminated oil containers, are handled as RCRA at the FMPC (see 2.2.2.4). Note that no containers of process wastes are presented in Appendix D or Appendix E. To the best of our knowledge, all other process waste containers have a quantity of substance which is less than the RQs listed in Appendix C and are, therefore, addressed in the FMPC Best Management Practices (BMP) Plan.

2.2.2.4 RCRA Hazardous Waste Containers

There are currently five warehouses used for the storage of Resource Conservation and Recovery Act (RCRA) wastes: the Pilot Plant Warehouse, Building 79, Building 80, Building 81, and the KC-2 Warehouse. The KC-2 Warehouse, and Building 79 contain PCB-contaminated oil and waste oils contaminated with RCRA constituents and are presently regulated by SPCC (regulations proposed would identify these materials as RCRA). These PCB and RCRA contaminated oils are handled as RCRA at the FMPC and are, therefore, stored in conditions which meet or exceed SPCC guidelines and will not be further addressed in this SPCC Plan. Since the substances that are stored in the Pilot Plant Warehouse, Building 80, and Building 81 are not oils or PCB-contaminated oils, they are not regulated by the SPCC and are not a part of this SPCC Plan. Drums containing RCRA wastes are addressed in the FMPCs RCRA Contingency Plan.

2.3 Wastewater Treatment Facilities

Figure 2-4 presents a schematic of the overall FMPC wastewater flow diagram. Major wastewater handling and treatment facilities are shown on Figure 2-2. The FMPC has three systems used for collecting, processing, and discharging process liquids, sanitary sewage, and stormwater runoff. Each of these systems has a monitoring system and a set of National Pollutant Discharge Elimination System (NPDES) discharge limitations as described in each of the following subsections. Furthermore, all streams, except for occasional overflows of stormwater runoff collected in the Storm Water Retention Basin (SWRB), NPDES Discharge Point 002, as discussed below, are monitored again at Manhole 175 (MH 175), NPDES Discharge Point 001, prior to discharge to the

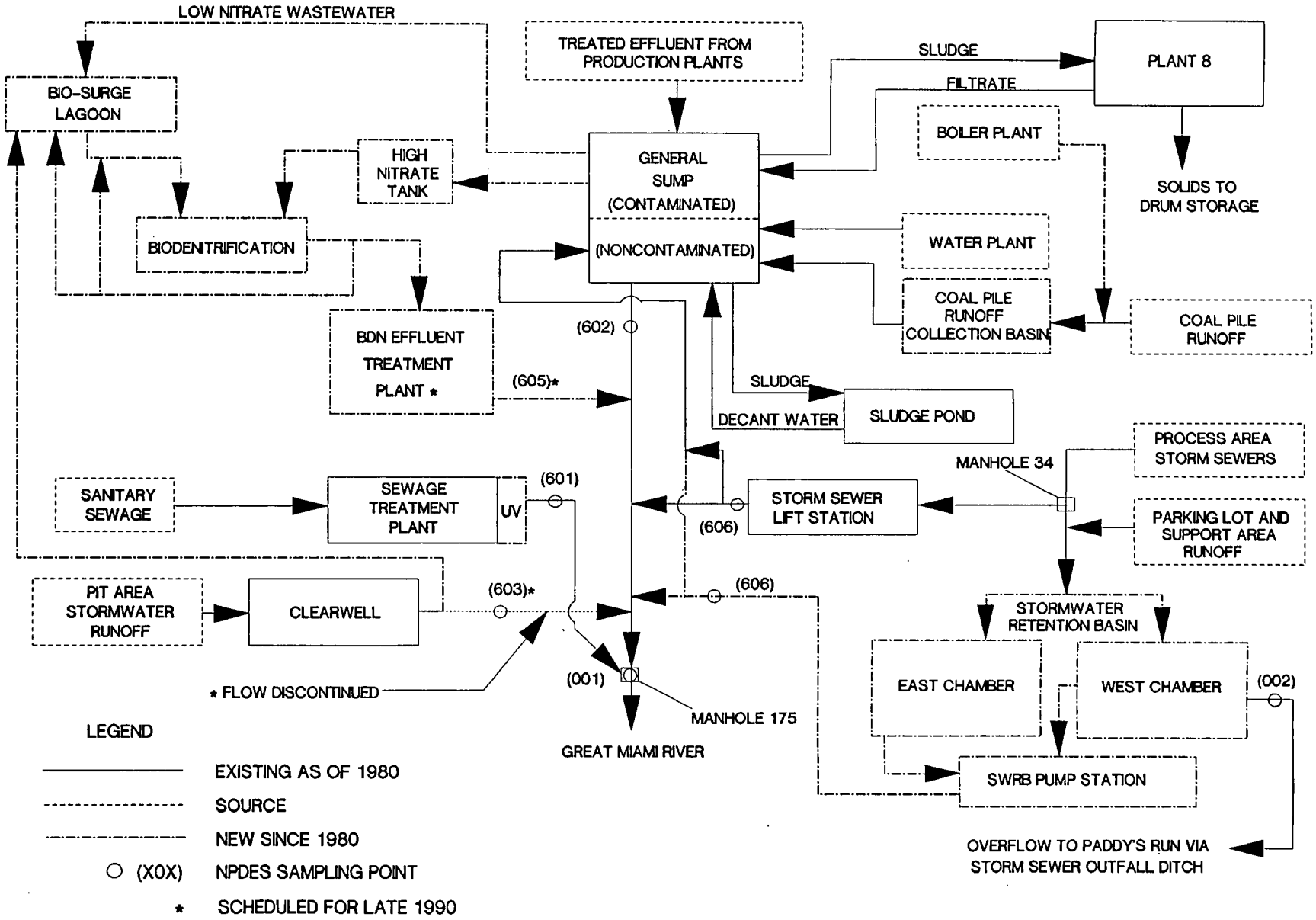


FIGURE 2-4 WASTEWATER FLOW DIAGRAM

Great Miami River. NPDES monitoring at MH 175 includes flowrate, dissolved oxygen, oil and grease, pH, total nonfilterable residue, nitrogen, nitrate, fluoride, carbonaceous Biochemical Oxygen Demand, and several heavy metals. Table 2-1 provides a summary of the NPDES plant effluent limits. In addition to the NPDES monitoring requirements, DOE has placed guidelines on the quantities of radionuclides discharged at MH 175. Table 2-2 provides a summary of DOE plant effluent guidelines for discharges to MH 175 (Discharge Point 001) and overflows from the SWRB (Discharge Point 002).

2.3.1 Process Waste System

Treated effluent is transferred to the General Sump where it is combined with similar effluent streams. The combined effluent is neutralized, coagulants are added, and suspended solids are removed by passing the effluent through Plant 8's filter system. The filtrate from the Plant 8 filter system is transferred back to the General Sump. The solid residues are placed in 55-gallon drums. These drums are stored until they are dried in the Rotary Kiln and prepared for shipment to an off-site disposal site.

From the General Sump, the treated process effluent is segregated on the basis of nitrate concentration and routed to either the 8 million gallon low nitrate Biodenitrification Surge Lagoon (BSL) or the 500,000 gallon High Nitrate Holding Tank (HNT). The effluent from the BSL and HNT are blended and feed to the Biodenitrification Facility (BDN). The BDN is a biological process utilizing fluidized bed reactors to remove nitrates from the wastewater. A recycle line from the BDN treatment facility to the BSL is provided to prevent a discharge of inadequately treated wastes. A new BDN Effluent Treatment System (ETS) is scheduled to be on line in late 1990. Upon completion of this system, wastewater discharged from the BDN will be further treated independently from sanitary sewage. The ETS will discharge directly to MH 175.

Some of the wastewater streams produced on-site are permitted to be discharged directly from the General Sump. Water Plant blowdown, Boiler Plant blowdown, and coal pile runoff are collected in Tanks 6 or 7 in the General Sump. After a coagulation and settling treatment, the wastewater is discharged to

Table 2-1

NPDES Effluent Discharge Limitations

OUTFALL 001 MANHOLE 175

PARAMETER	CONCENTRATION UNITS	CONCENTRATION 30 DAY	CONCENTRATION DAILY	LOADINGS UNITS	LOADINGS 30 DAY	LOADINGS DAILY
DISSOLVED OXYGEN	MG/L	--	(5.0 MIN)	KG/DAY	--	--
RESIDUE, TOTAL NONFILTERABLE	MG/L	30	45	KG/DAY	99	149
OIL AND GREASE, TOTAL	MG/L	15	15	KG/DAY	50	50
NITROGEN, AMMONIA (NH3)	MG/L	--	--	KG/DAY	--	--
NITRATE AS NITROGEN	MG/L	--	--	KG/DAY	--	--
CYANIDE, TOTAL	MG/L	0.036	0.076	KG/DAY	0.120	0.251
FLUORIDE, TOTAL (F)	MG/L	--	--	KG/DAY	--	--
CHROMIUM, TOTAL (Cr)	UG/L	--	--	KG/DAY	--	--
COPPER, TOTAL (Cu)	UG/L	23	94	KG/DAY	0.077	0.031
LEAD, TOTAL (Pb)	UG/L	60	776	KG/DAY	0.199	2.562
NICKEL, TOTAL (Ni)	UG/L	--	--	KG/DAY	--	--
SILVER, TOTAL (Ag)	UG/L	12	26	KG/DAY	0.040	0.086
CHROMIUM, DISSOLVED HEXAVALANT	UG/L	--	--	KG/DAY	--	--
FLOW RATE, DAILY	MGD	--	--		--	--
BIOCHEMICAL OXYGEN DEMAND, C.	MG/L	20	30	KG/DAY	66	99
pH, CONTINUOUS MONITORED		(6.5 TO 9.0)				

OUTFALL 002 STORMWATER RETENTION BASIN OVERFLOW

PARAMETER	CONCENTRATION UNITS	CONCENTRATION 30 DAY	CONCENTRATION DAILY	LOADINGS UNITS	LOADINGS 30 DAY	LOADINGS DAILY
RESIDUE, TOTAL NONFILTERABLE	MG/L	--	100	KG/DAY	--	--
OIL AND GREASE, TOTAL	MG/L	--	15	KG/DAY	--	--
NITROGEN, AMMONIA (NH3)	MG/L	--	--	KG/DAY	--	--
NITRATE AS NITROGEN	MG/L	--	--	KG/DAY	--	--
FLUORIDE, TOTAL (F)	MG/L	--	--	KG/DAY	--	--
CHROMIUM, TOTAL (Cr)	UG/L	--	3986	KG/DAY	--	--
COPPER, TOTAL (Cu)	UG/L	--	45	KG/DAY	--	--
NICKEL, TOTAL (Ni)	UG/L	--	3137	KG/DAY	--	--
SILVER, TOTAL (Ag)	UG/L	--	11.6	KG/DAY	--	--
CHROMIUM, DISSOLVED HEXAVALANT	UG/L	--	19	KG/DAY	--	--
FLOW RATE, DAILY	MGD	--	--		--	--
pH, (4 GRAB SAMPLES/EVENT)		(6.5 TO 9.0)				

TABLE 2-1 (Continued)

OUTFALL 601 SEWAGE TREATMENT PLANT (1)

PARAMETER	DISCHARGE LIMITATIONS CONCENTRATION UNITS	30 DAY	DAILY	LOADINGS UNITS	30 DAY	DAILY
BIOCHEMICAL OXYGEN DEMAND, 5-D	MG/L	20	40	KG/DAY	9.5	19
RESIDUE, TOTAL NONFILTERABLE	MG/L	20	40	KG/DAY	9.5	19
NITROGEN, AMMONIA (NH3)	MG/L	--	--	KG/DAY	--	--
FLUORIDE, TOTAL (F)	MG/L	2.3	5.1	KG/DAY	1.08	2.43
CHROMIUM, TOTAL (Cr)	UG/L	13	32	KG/DAY	0.006	0.015
COPPER, TOTAL (Cu)	UG/L	53	112	KG/DAY	0.025	0.053
NICKEL, TOTAL (Ni)	UG/L	32	49	KG/DAY	0.015	0.023
FECAL COLIFORM (SUMMER ONLY)	#/100ML	1000	2000	KG/DAY	--	--
FLOW RATE, DAILY	MGD	--	--		--	--
pH, CONTINUOUS MONITORED		(6.5 TO 9.0)				

OUTFALL 602 GENERAL SUMP

PARAMETER	DISCHARGE LIMITATIONS CONCENTRATION UNITS	30 DAY	DAILY	LOADINGS UNITS	30 DAY	DAILY
CHROMIUM, TOTAL (Cr)	UG/L	41	54	KG/DAY	0.010	0.013
COPPER, TOTAL (Cu)	UG/L	66	111	KG/DAY	0.016	0.027
NICKEL, TOTAL (Ni)	UG/L	91	165	KG/DAY	0.022	0.040
CHROMIUM, DISSOLVED HEXAVALANT	UG/L	12	17	KG/DAY	0.003	0.004
FLOW RATE, DAILY	MGD	--	--		--	--
pH, WEEKLY GRAB SAMPLE		(6.5 TO 9.0)				

OUTFALL 603 CLEARWELL (1)

STORMWATER FROM THE CLEARWELL SHALL BE PUMPED ONLY TO THE BIO-SURGE LAGOON.

TABLE 2-1 (Continued)

OUTFALL 604 STORM SEWER LIFT STATION

PARAMETER	DISCHARGE LIMITATIONS CONCENTRATION UNITS	30 DAY	DAILY	LOADINGS UNITS	30 DAY	DAILY
RESIDUE, TOTAL NONFILTERABLE	MG/L	30	100	KG/DAY	--	--
OIL AND GREASE, TOTAL	MG/L	15	15	KG/DAY	--	--
NITRATE AS NITROGEN	MG/L	--	--	KG/DAY	--	--
FLUORIDE, TOTAL (F)	MG/L	--	--	KG/DAY	--	--
FLOW RATE, DAILY	MGD	--	--		--	--
pH, CONTINUOUS MONITORED		(6.5 TO 9.0)				

OUTFALL 605 BIODENITRIFICATION EFFLUENT TREATMENT SYSTEM

PARAMETER	DISCHARGE LIMITATIONS CONCENTRATION UNITS	30 DAY	DAILY	LOADINGS UNITS	30 DAY	DAILY
BIOCHEMICAL OXYGEN DEMAND, 5-D	MG/L	30	45	KG/DAY	26	38
RESIDUE, TOTAL NONFILTERABLE	MG/L	30	45	KG/DAY	26	38
NITROGEN, AMMONIA (NH3)	MG/L	--	--	KG/DAY	--	--
NITRATE AS NITROGEN	MG/L	72.7	145	KG/DAY	62	124
FLUORIDE, TOTAL (F)	MG/L	1.3	4.5	KG/DAY	1.1187	3.8247
CHROMIUM, TOTAL (Cr)	UG/L	12	27	KG/DAY	0.0101	0.0226
COPPER, TOTAL (Cu)	UG/L	45	90	KG/DAY	0.0387	0.0770
NICKEL, TOTAL (Ni)	UG/L	29	42	KG/DAY	0.0251	0.0361
CHROMIUM, DISSOLVED HEXAVALANT	UG/L	--	--	KG/DAY	--	--
FLOW RATE, DAILY	MGD	--	--		--	--
pH, CONTINUOUS MONITORED		(6.5 TO 9.0)				

OUTFALL 606 STORMWATER RETENTION BASIN TO MANHOLE 175

PARAMETER	DISCHARGE LIMITATIONS CONCENTRATION UNITS	30 DAY	DAILY	LOADINGS UNITS	30 DAY	DAILY
RESIDUE, TOTAL NONFILTERABLE	MG/L	--	--	KG/DAY	--	--
OIL AND GREASE, TOTAL	MG/L	--	--	KG/DAY	--	--
FLOW RATE, DAILY	MGD	--	--		--	--
pH, CONTINUOUS MONITORED		(6.5 TO 9.0)				

(1) LIMITS AFTER BDN FACILITY UPGRADE COMPLETED IN LATE 1990.
-- MONITORED ONLY

Table 2-2

DOE Guidelines for Radionuclide Discharge (1)

Radionuclide	Guideline pCi/l	Radionuclide	Guideline pCi/l
227 Actinium	10	99 Technetium	100,000
137 Cesium	3,000	228 Thorium	400
210 Lead	30	230 Thorium	300
237 Neptunium	30	232 Thorium	50
238 Plutonium	40	234 Thorium	10,000
239 240 Plutonium	30	233 Uranium	500
40 Potassium	7,000	234 Uranium	500
226 Radium	100	235 Uranium	600
228 Radium	100	236 Uranium	500
106 Ruthenium	6,000	238 Uranium	600
90 Strontium	1,000	Sum Of Fractions	(2)

(1) As stated in DOE Order 5400.5, February 8, 1990. Only radionuclides suspected of being in FMPC wastewater are listed.

(2) The DOE guideline values are given for individual radionuclides. For mixtures of radionuclides, the sum of the ratios of the observed concentration of each radionuclide to its corresponding guideline shall not exceed 1.0.

Tank 9 in the General Sump where it is monitored for NPDES permit limitations of hexavalant chromium, total chromium, copper, nickel, pH and flow when discharged from the General Sump to MH 175. 1984

2.3.2 Sanitary Sewer System

Sanitary sewage generated at the FMPC is collected by the sanitary sewer system. A sanitary lift station pumps the collected sewage to a Sewage Treatment Plant (STP) located east of the process area (see Figure 2-2). The treated discharge from the STP is monitored for the flow rate, pH, total nonfilterable residue, nitrogen, fluoride, chromium, copper, nickel, and fecal coliform prior to release to MH 175.

2.3.3 Storm Sewer System

The storm sewer system collects stormwater runoff from building roof drains, uncontrolled storage pads, roadways, open ground areas, and railroad underdrains. The storm sewer system from the process area flows by gravity to MH 34. A 14 inch high dam in the 60-in. diameter storm sewer downstream of MH 34 diverts normal sewer flow into the wetwell of the Storm Sewer Lift Station (SSLS). Area Code Number (area location) 22B on Figure 2-2 is the location of the Lift Station Pumphouse. Prior to reaching the SSLS, contamination of the storm sewer system by uranium or other compounds may be indicated by pH-triggered alarms in the FMPC Communications Center, the Water Treatment Plant, and at the control panel boards located in Plant 2/3 and Plant 8. These alarms are actuated by abnormal pH readings (< 6.5 or > 8.5 pH units) from meters located at the storm sewer lift station and Manholes 12, 14, 22, and 23 (see Figure 5-1 for location of these manholes) as described in FMPC Standard Operating Procedure (SOP) 43-C-308.

The SSLS pumps the normal dry weather flow in the storm sewer system to MH 175. The two SSLS pumps are activated by two float control switches and have a combined maximum design capacity of approximately 500-gpm. The lift station houses instruments that record the flow, pH, suspended solids and temperature. Two composite samplers sample the discharge to MH 175 and the flow that spills over the 14-in. dam. Alarms from the instruments are transmitted to the Water Plant where unusual events at MH 34 can be monitored.

During periods of heavy precipitation, the flow collected in the storm sewer system will overflow the 14 inch high dam in the 60-in. storm sewer and flow to the Stormwater Retention Basin (SWRB). The overflow is directed by sluice gates into one of the two chambers of the Stormwater Retention Basin. The SWRB is designed to retain a 10-year 24-hour storm event (approximately 10.2 million gallons). The basin is lined with dual liners, a minimum 30-mil oil and solvent resistant Flexible Membrane Liner (FML) underline with a soil bentonite liner. An underdrain system is provided beneath the FML which drains to a sump. A sump pump allows the FMPC to pump any stormwater that leaks through the FML back into the basin. Monitoring of the sump pump discharge allows the FMPC to detect how much stormwater leaks from the SWRB. After settling, manually operated pumps transfer the stormwater collected within the basin to MH 175. The level in the basin is kept as low as practical at all times. In the event of precipitation in excess of the design capacity of the Stormwater Retention Basin, stormwater will overflow into Paddy's Run via the Storm Sewer Outfall Ditch (NPDES Discharge Point 002).

In the event that a spill of a CWA hazardous substance or oil defeats a secondary containment system or occurs in an unprotected location, the substance could potentially migrate to the storm sewer system. Once the spilled substance enters the storm sewer system, containment measures can be taken to prevent the substance from being discharged to the Great Miami River. Immediately upon identification that a spill has occurred, the lift station pumps at MH 34 are shut down. After some valving changes, the SSLS pumps are restarted, and the flow is diverted to the General Sump for treatment or to the Biodenitrification Surge Lagoon if the problem can be addressed in this part of the wastewater system (i.e., pH adjustment, etc.). Should the General Sump be unable to contain the flow, the SSLS can remain shut down and the spill will automatically be diverted to the Stormwater Retention Basin for storage until the General Sump can accept it. The discharge from the Stormwater Retention Basin can then be diverted to the General Sump by aligning the valving and activating the pumps located at the Stormwater Retention Basin. A spill occurring during a period of high precipitation, when the capacity of the Stormwater Retention Basin is exceeded, represents the greatest probability of uncontrolled discharge to a navigable waterway.

2.4 Oil Spill History

The FMPC logs and reports spills or emergency events to the DOE through the use of DOE-ORO Initial Event Report forms. If a spill event is reportable to a regulatory agency, this form also provides the DOE Oak Ridge Emergency Operations Center with recommendations and the appropriate information for making verbal regulatory reports. A log of these reports is available to the DOE-ORO, contractor management, and any outside governmental agency for trend analysis and review as a part of the functional appraisal process. Minor spills of oil or petroleum products that are immediately cleaned up and are non reportable to regulatory agencies are also documented at the FMPC.

According to FMPC records, no regulatory reportable oil spills have occurred since the issuance of the FMPC Oil And Hazardous Substance Spill Prevention Control And Countermeasure Plan (NLCO-1111, Revision 2), April 1985.

3.0 Spill Prevention

3.0 SPILL PREVENTION

At the FMPC, an active program has been adopted through which spill occurrences are minimized by concentrating on eliminating or minimizing the likelihood of spills through the use of nationally recognized codes for the design, construction (secondary containment systems), installation, and operation of the plant equipment. Plant personnel training and the availability of Standard Operating Procedures (SOPs) for respective jobs are integral parts of this program. The overall intent of Spill Prevention at the FMPC is to provide personnel with training, basic information, and proper equipment to perform their duties in an efficient, correct, and safe manner. At the FMPC, the programs which have been adopted through which spill occurrences are prevented or minimized as required by 40 CFR, Part 112(10) which states that "Owners or Operators are responsible for properly instructing their personnel in the operation and maintenance of equipment to prevent the discharges of oil and applicable pollution control laws, rules, and regulations..." are the following:

- Personnel Training
- Labeling of Storage Tanks and Containers
- Operating Procedures
- Inspections of Storage Areas & Preventative Maintenance
- Security
- Best Management Practices (BMP) Committee
- Containment Systems & Countermeasures
- Inventory & Level Controls
- RCRA Training

3.1 Training

Plant personnel are trained in CWA hazardous substances handling, identification of CWA hazardous substances through the labeling system, use of personnel protective equipment, and response to emergency procedures. The training material is prepared and conducted by the Industrial, Radiological, Safety, and Training (IRS&T) Department with input from area supervisors and technical staff such as engineers, chemists, technicians, etc.

The training in these courses is designed to encourage employee awareness and an understanding of the types of hazards to which they are routinely exposed. The following are some of the subjects among the major points emphasized during the various training programs:

- Training to inform employees of the potential harmful effects of the CWA hazardous substances in the workplace, including routes of entry, acute and chronic effects, and symptoms of overexposure.

- Location and availability of Material Safety Data Sheets (MSDS) and a detailed review of the use and understanding of a MSDS.

- Explanation of the labeling systems and the various symbols which may be used to identify the various CWA hazardous substances. This includes an understanding of the National Fire Protection Association (NFPA), Department of Transportation (DOT), and any other in-plant labeling system that might be used.

- Detailed information in the selection and use of personnel protective equipment (gloves, aprons, goggles, etc.).

- Instruction in the location and use of emergency eyewash stations and showers.

- Instruction in the proper procedure for reporting a spill, evacuating an area, and any first line containment measure which may be taken.

- Instruction in the nature of respiratory hazards, the limitations of the different types of respirators, the use of a respirator, and the requirements to ensure a good fit.

- Instruction in the implementation of emergency preparedness procedures and the corrective actions required to contain a CWA hazardous substance or oil spill. Included is a discussion of the selection and use of containment equipment, dependent upon the physical characteristics of the substance.

A comprehensive detailed training program has also been developed for the Emergency Response Team (ERT) personnel to familiarize them with the types of hazards possible within the facilities, the corrective actions to mitigate the consequences of a spill or other emergency, and the use of personnel protective equipment. Emergency Response Team personnel at the FMPC receive general training similar to that received by other plant personnel which is described above. The FMPC also conducts ERT, Emergency Operations Center (EOC) Staff and Security drills as needed, but at least quarterly. These include ERT and Security drills for each shift at least once a quarter and at least one EOC Staff drill each year on an offshift. One comprehensive onsite exercise is conducted each year. A joint exercise every two years includes both onsite and offsite response personnel and equipment.

3.2 Training Programs

All non-process employees at the FMPC, including the office staff and security personnel receive regular training and retraining through quarterly safety meetings. All process employees at the FMPC receive regular training and retraining through monthly safety meetings. Documentation of this training includes job title, job description, name of the employee, and completed training program information is maintained by the Industrial, Radiological Safety and Training (IRS&T) Department.

1) Basic Orientation - All employees receive basic orientation as required by FMPC Site Procedure FMPC 106 "Employment and Introduction of New Personnel."

2) Process Related Training - All process orientated employees receive training as required by FMPC Site Procedure 102 "Training," and DOE-Prescribed OSHA Standards.

3) Non-Process Related Training - All non-process oriented employees receive training as required by FMPC Site Procedure 102 "Training," and DOE-Prescribed OSHA Standards.

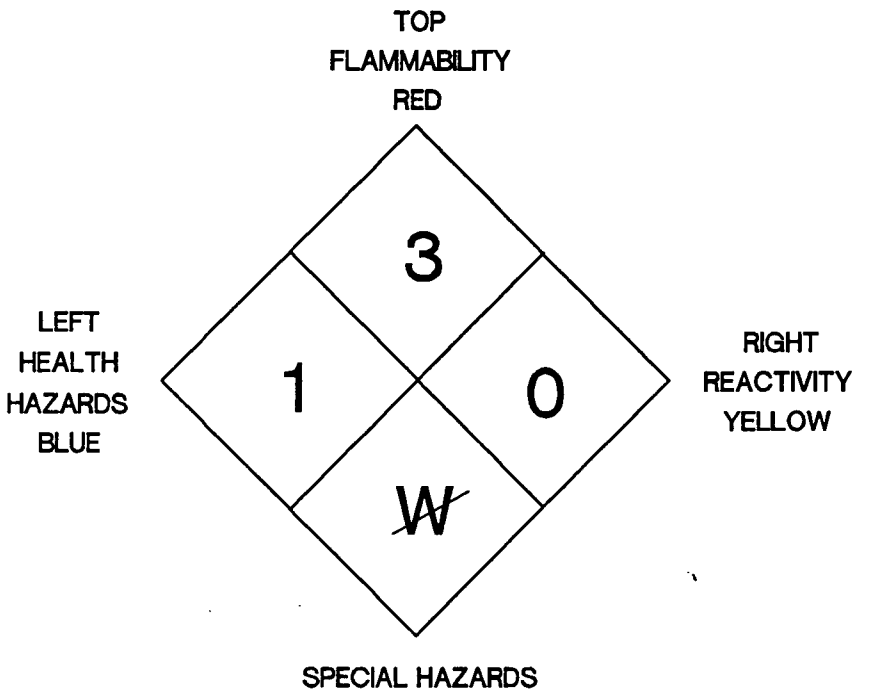
4) Job and/or Department Specific Training - All employees receive training as required by job and/or department specific Standard Operating Procedures (SOPs).

5) RCRA Training - All employees receive basic orientation as required by various EPA rules and regulations. The object of this training is to provide employees with the information needed to respond to an emergency such as a CWA hazardous substance or oil spill at the FMPC.

3.3 Labeling of Storage Tanks and Containers

FMPC employees receive instruction in the identification of the health and safety hazards of a CWA hazardous substance through use of a standardized labeling system. A labeling system is required by the DOE-Prescribed OSHA Hazard Communication Program. The FMPC has adopted the NFPA Standard System for Identification of Fire Hazards of Materials (NFPA-704). The NFPA numerical hazard rating scheme is used to provide general hazard information. These ratings are shown on a four-part label, which is color-coded to represent the different hazard categories. The diamond segments represent flammability, reactivity, health, and other unusual hazards. Each class of hazard is rated on a scale of 0 to 4, with four being the most serious hazard rating. The general criteria for rating chemicals and an example of the diamond are provided on Figure 3-1. In general, the requirement that labels be visible during normal operations and also visible to emergency personnel during a fire or other emergency dictates the number and size of labels placed on process and storage tanks. The size of the labels used is dependent on the size of the storage tank. The number of labels on an individual storage container is kept to a minimum, consistent with instant recognition. The number of labels varies with the diameter of the tank and direction from which visibility is desired. Inspections by the Safety and Fire Inspector and/or Industrial Hygiene and Safety personnel are performed for verification that storage tanks and container storage areas are adequately labeled.

IDENTIFICATIONT SYSTEM HAZARDOUS OF MATERIALS



DEGREE OF HAZARD

4 Severe
3 Special
2 Moderate
1 Minor
0 No Hazard

SPECIAL HAZARDS

W - Water Reactive
OX - Oxidizer
☢ - Radioactive

FIGURE 3-1 Hazard Labeling Scheme

3.4 Operating Procedures

Existing job and/or department specific Standard Operating Procedures (SOPs) for activities at the FMPC dictate how an employee will perform such tasks as the inspection of a bulk storage tank, filling a bulk storage tank, operation of a truck loading/unloading facility, facility transfer operations, etc. The information in the SOP includes guidance for environmental considerations, industrial hygiene concerns, radiological safety concerns, safety requirements and equipment, and the steps for actual performance of the job function. Table 3-1 provides a summary of some of the supporting documents and procedures for containing and responding to a spill at the FMPC. The FMPC trains employees according to the information contained in individual SOPs. These individual SOPs and other supporting documents are available at various locations throughout the FMPC including the facility owners' office, security, training department, and Emergency Operations Center (EOC). Below is a brief description for each of the supporting documents and procedures for SPCC listed in Table 3-1.

FMPC Emergency Plan

The FMPC Emergency Plan describes the emergency preparedness program that complements the engineered safety features of the FMPC Facility. An analysis of potential credible emergencies (such as spills) form the basis for emergency planning. The incident classification of the specific hazards communicates the hazard potential for organizations responding to a spill (including off-site organizations). The facilities and equipment section describes the tools used to respond to and manage emergencies. Simulated emergency conditions (drills and exercises) allow on-site departments and off-site organizations to practice and test response capabilities. This plan also has information on how plant evacuations from the FMPC will be handled and coordinated with on-site and off-site organizations during a spill incident or other emergency. Also, this plan is distributed to local organizations such as local fire departments, hospitals, etc. in the general area of the FMPC.

Table 3-1

Supporting Documents And Procedures

Number	Title
(1)	FMPC Emergency Plan
(2)	Job Specific SOPs
(3)	FMPC Maintenance Operating Systems Manual
(4)	FMPC Best Management Practices Plan
(5)	OSHA Standards
(6)	FMPC 106 - Employment and Introduction of New Personnel
(7)	FMPC 102 - Training (Scheduled for issuance in 1990)
(8)	FMPC 503 - FMPC Spill Incident Reporting and Cleanup
(9)	FMPC 20-C-606 Hazardous Material Spill Cleanup
(10)	EPA Regulations
(11)	Section G: RCRA Contingency Plan
(12)	FMPC 2-C-910 - Inspecting Refinery Control Floor Areas and Sumps and Operating Manual Sumps
(13)	RCAW4 - For Control of Tank Storage

Job Specific SOPs

These documents are written by various departments for specific jobs within that department. They establish the actions to be taken by FMPC personnel to perform the job described in the SOP. Responsibilities for FMPC personnel associated with various jobs are listed in various SOPs. Industrial health and safety requirements associated with performing a job or task are defined for each SOP along with the required permits to perform the job. Finally, each employee is tested according to the information contained in these SOPs before they are allowed to operate that piece of equipment or perform that task.

FMPC Maintenance Operating Systems Manual

The Maintenance Operating System (MOS) detailed in this manual is a Maintenance Management System designed to integrate with, and to enhance the operating procedures at the FMPC. The controls and procedures contained in the manual have been developed to perform a specific function within the scheduling principles of planning, assignment, follow-up, and reporting. The MOS provides management and supervision with the means to monitor the accomplishment of established goals utilizing available manpower. The system identifies and corrects off-schedule conditions and increases productivity throughout all levels of the operation.

FMPC Best Management Practices Plan

The FMPC Best Management Practices (BMP) Plan is to control of releases of CWA hazardous substances that are not authorized by Sections 304 and 402 of the Clean Water Act. Best Management Practices are defined by the Environmental Protection Agency (EPA) as "actions or procedures to prevent or minimize the potential for the release of toxic pollutants or hazardous substances in significant amounts to surface waters". The plan addresses the specific BMP requirements imposed through applications of the Clean Water Act and the Ohio Water Pollution Control Act.

DOE-Prescribed OSHA Standards

The DOE-Prescribed Occupational Safety and Health Act standards are any established Federal standard, that results in improved safety or health conditions for designated employees under a specific regulation. These Federal standards requires the conditions or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide a safe or healthful employment and place of employment.

FMPC 106 - Employment and Identification of New Personnel

This procedure identifies the responsibilities of FMPC personnel and describes the actions required for requesting and accomplishing increases or replacements in the FMPC workforce and for assuring proper indoctrination of new employees to the FMPC. Also, the procedure indoctrinates new employees on health and safety rules and responsibilities applicable to those employees working in the process area or other appropriate areas.

FMPC 102 - Training (Scheduled For Issuance In 1990)

This procedure assigns responsibilities for assuring that needed training activity programs for employees are identified, developed, implemented, properly documented, evaluated, and revised, as necessary. This procedure also outlines methods for the development of qualified instructors.

FMPC 503 - FMPC Spill Incident Reporting and Cleanup

This procedure describes actions and responsibilities for initial reporting, cleanup operations, and follow-up actions for spill incidents at the FMPC. Also, this procedure along with the FMPC Emergency Plan provide the mechanism by which public information will be released to public, local fire departments, etc. The Environmental Compliance Spill Reporting Advisor is the designated person at the FMPC accountable for spill prevention reports that go to management at the FMPC.

FMPC 20-C-606 - Hazardous Material Spill Cleanup

The purpose of this document is to define the requirements for containing, controlling, and cleaning up CWA hazardous substance leaks and spills. This procedure applies to any CWA hazardous substance leak and other spill events (such as oil) which occur in Waste Operations and Operations Department areas.

EPA Regulations

The Environmental Protection Agency (EPA) is a federal agency that was established in 1970. The purpose of EPA regulations is to establish standards that will prevent air or effluent pollution or other damage to the environment. The only EPA regulations relevant to this document are 40 CFR, Part 112, which deals with oil pollution prevention of the navigable waters of the United States or adjoining shorelines, and Part 761 which deals with PCB pollution prevention.

Section G: RCRA Contingency Plan

The RCRA Contingency Plan is developed for the Feed Materials Production Center (FMPC) to satisfy the requirements of 40 CFR, Part 264.50. The Contingency Plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden releases of hazardous waste constituents to the air, soil, or surface water. Also, the RCRA Contingency Plan addresses the actions to be taken if an event occurs.

FMPC 2-C-910 Inspecting Refinery Control Floor Areas and Sumps and Operating Manual Sumps

This document was written by Production Operations to instruct employees in that department on how to inspect floor areas and how to operate manual sump pumps including sump pumps for secondary containment areas (dikes) in the Refinery Area. Employees are also responsible for inspecting storage tanks and secondary containment dikes for leaks, cracks, or other types of failure. Inspection records are filled out for each of these inspections and maintained by the supervisor in that area. Industrial health and safety requirements

associated with performing this job or task are defined in this SOP along with the required permits to perform the job. Similar SOPs for other areas at the FMPC have also been written for inspecting secondary containment areas and storage tanks.

RCAW4 For Control of Tank Storage

The criteria in the above referenced Regulatory Compliance Guide should be followed when designing and operating FMPC tanks to prevent spills, leakage, or contaminated runoff from entering the storm sewer system, soil, or drainage ditches. While these criteria are primarily based on oil spill regulations, future regulations encompassing CWA hazardous substances are likely. Good management practices dictate that similar guidance be extended to tanks containing these substances as well. This Regulatory Compliance Guide also dictates how primary containment systems and secondary containment systems will be inspected by FMPC personnel and that these records are to be kept for at least three (3) years.

3.5 Inspection of Storage Areas and Preventive Maintenance

Visual inspection of outside storage tanks are performed weekly to check the condition of the tank, any ancillary equipment and the secondary containment diking. Check Sheets are maintained by the facility owner in each plant's files and retained for at least three (3) years. These checks include the documenting of the date of the inspection, problems identified, and any remedial action needed or taken following the inspection. The inspections of primary and secondary containment systems are performed according to RCAW4. Information regarding the chemical analysis results of any substance in a container within a diked area is maintained by the facility owner. Table 3-1 provides a list of the supporting documents and procedures pertinent to the inspection and the containing of leaked substance contained within controlled, diked or curbed pads. All primary containments holding CWA hazardous substances at the FMPC are inspected and maintained as required by the "FMPC Best Management Practices Plan." Table 3-2 represents the inspection schedule for the security equipment, safety and emergency equipment, loading and unloading areas, and tank and container storage areas at the FMPC.

Table 3-2

Inspection Schedule

Area/Equipment	Specific Item	Inspection Frequency
Security	Facility fence w/entrance gates	Daily
	Turnstile gates	Upon failure
	TV cameras	Upon failure
	Radios	Upon failure
	Beeper system	Weekly
	Locking devices	Upon failure
Safety and Emergency Equipment	Emergency alarm system (red pull boxes)	Per NFPA - Bimonthly
	Phone system	Daily use
	Sprinkler alarm system (emerg. alarm system)	Per NFPA - Bimonthly
	Emergency Message System	As used, daily
	Portable radio system	Daily use
	Automatic sprinkling systems (buildings)	Per NFPA-annually
	Automatic emergency lighting systems	Weekly
	Fire engines and ambulances	Daily-visual Semi-weekly-operation Weekly-on board equipment
	Fire extinguishers	Monthly/after each use
	Fire blankets	As used/annually
	First aid equipment and supplies	As used/weekly
	Portable floodlights	Weekly
	Portable generators	Weekly/as used
	Breathing equipment; atmosphere supplying respirators, air-purifying respirators filter masks	Weekly/after each use
	Self Contained Breathing Apparatus	Monthly/after each use
	Face shields, protective eyeglasses	Weekly/after each use

Table 3-2

Inspection Schedule

Area/Equipment	Specific Item	Inspection Frequency
Safety and Emergency Equipment (cont.)	Protective clothing (impermeable full body coveralls, wet suits, gloves, and foot coverings of rubber, neoprene, and vinyl)	Monthly/after each use
	Lifeline Rescue Equipment	Prior to being placed in service, discarded after each use
	Harnesses with line, wristlets with line, hard-hats	Weekly/after each use
	pH meters	Weekly
	Explosion meters, oxygen monitors	Weekly
	Standard industrial absorbents	Weekly/as needed
	Sandbags, straw, pads	Weekly/as needed
	Absorbent booms, sheets, and pillows	Weekly/as needed
	Oil skimmers	Weekly/as used
	Sewer and process line plugs	As used
	Storm drain rubber mat covers	Weekly/as used
	Emergency showers and eyewash stations	Weekly
	Medical aid station	Weekly
Container Storage Areas	Container placement	Weekly
	Sealing of containers	Weekly
	Labeling of containers	Weekly
	Containers	Weekly
	Pallets	Weekly
	Floor and curbs	Weekly
	Debris and refuse	Weekly
	Warning signs	Weekly

Table 3-2

Inspection Schedule

Area/Equipment	Specific Item	Inspection Frequency
Container Storage Areas (cont.)	Tanks	Weekly
	Dike area, floor and walls	Weekly
	Labeling of tanks	Weekly
	Debris and refuse	Weekly
	Warning signs	Weekly
	Level Control	Weekly
Loading And Unloading areas	Dike area, floor and walls	Weekly
	Debris and refuse	Weekly
	Warning signs	Weekly
	Tanker trucks lowermost drain	After each use
	Terminal connection for loading and unloading	Weekly, after each use
	Floor and curb	Weekly
	Labeling of transfer lines	Weekly
	Tanker transfer lines	After each use

Inspection and preventive maintenance of pollution prevention equipment is done according to Maintenance Work Instructions which are identified by the Mimics System for each piece of equipment at the FMPC. The Mimics Number for each piece of equipment is typed into the computer and a printout will then be obtained that describes the preventive maintenance and inspection that needs to be performed for that piece of equipment.

3.6 Security

All storage tanks containing significant quantities of oil and/or CWA hazardous substances are located within the FMPC production area, service area, or waste storage area. Due to the nature of the work performed at the facility, a heightened security posture is maintained year round at the FMPC. A security guard force is maintained 24 hours a day with constant visual inspections of possible intruder access points. A line of 10 foot high fencing encircles the production area, service area, and waste storage area with the gates either locked or manned at all times. Warning signs are posted at all entrances to the facility. An extensive security lighting system illuminates the site from dusk to dawn. Thus, the possibility of a spill occurring due to vandalism or sabotage is extremely remote.

In addition, locked security fencing and padlocked access doors prevent inadvertent access to the the five RCRA warehouses (Pilot Plant Warehouse, Building 79, Building 80, Building 81, and the KC-2 Warehouse).

3.7 Best Management Practices (BMP) Committee

The Best Management Practices (BMP) Committee periodically reviews those Minor Event Reports (MERs) and Unusual Occurrence Reports (UORs) which result from spill incidents or events at the FMPC. After a review and evaluation of a MER or UOR by the BMP Committee, they will formulate recommendations to prevent a recurrence of a similar incident or event. Then, the BMP Committee will submit their recommendations to prevent a similar incident or event to the management at the FMPC.

3.8 Containment Systems and Countermeasures

3.8.1 Primary Containment Systems

Primary containment systems consist of the tanks or containers in which the PCBs, oils or CWA hazardous substances are stored. A summary of the primary containment systems that apply to SPCC at the FMPC are presented in Appendix D. Also presented in Appendix D is a tabular analysis of the primary containment systems in comparison to appropriate guidelines in 40 CFR, Part 112.7. As stated in the regulatory guidelines, 40 CFR, Part 112.7, new and old tank installations should, as far as practical, be fail-safe engineered or updated into a fail-safe engineered installations to avoid spills. This includes providing one or more types of level controls listed in Appendix D. If no type of level control listed in Appendix D exists for a tank, an "x" appears in the appropriate column. An explanation of the comparison guidelines, along with the notations used to quantify conformance to the respective guidelines, is contained in Appendix D.

3.8.2 Secondary Containment Systems

Secondary containment systems consisting of diking or controlled pads surround most of the tank and container storage areas and loading and unloading areas to prevent the release of a CWA hazardous substance or oil to the environment. In addition, some of these secondary containment areas are lined with a material such as acid brick or stainless steel, that is resistant to the stored oils, or CWA hazardous substances. An analysis of existing secondary containment systems for conformance with the appropriate guidelines as stated in 40 CFR, Part 112.7 is presented in Appendix E. An explanation of the comparison guidelines, along with the notations used to quantify conformance to the respective guidelines, is contained in Appendix E.

In addition to the above secondary containments, Satellite Accumulation Areas have been established in various areas throughout the FMPC where permanent secondary containment is unfeasible or impossible. The purpose of these Satellite Accumulation Areas is to provide a temporary secondary containment system for small tanks and/or drums of CWA hazardous substances or oils by way

of a plastic secondary containment system that will contain the entire quantity of a tank and/or drum that is not ready to be shipped to a permanent storage area or recovery and treatment area.

The guidelines in 40 CFR, Part 112 indicate that storage facilities should be constructed so that a secondary means of containment is provided for the contents of the largest single tank within a common area, plus sufficient freeboard to allow for precipitation. The volume of stormwater (precipitation) resulting from a 25-year, 24-hour rainfall in the Cincinnati area (4.9 inches) is assumed for freeboard design. The 25-year, 24-hour criteria was taken from 40 CFR, Part 264.193(e)(i)(ii) (Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities) and was judged to be appropriate for application to the SPCC Plan. For Loading and Unloading Facilities, the containment system should be designed to hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.

The stormwater collected and contained within each containment dike can be drained to the storm sewer through manually controlled valves after inspection/analysis to determine that no contamination is present and with supervisory authorization. However, if required by the analysis, the substance from a diked area or controlled pad can be pumped to a portable tank or dumpster, and transferred to a suitable treatment facility. Provisions also exist in some areas to transfer the contained contaminated substance via a sump pump to a treatment facility (such as Plant 6 Water Treatment or the General Sump). The destination for water being pumped from diked areas is listed in Appendix E.

3.8.3 Immediate Countermeasures

While every effort is made to contain an oil or CWA hazardous substance by employing the above procedures, if a spill does escape from a secondary containment system or occurs in an unprotected location within the production area, the spilled substance could flow to the storm sewer system.

A general description of these countermeasures described in the FMPC Emergency Plan that are to be followed in case of a spill event are provided herein. Any employee who detects an actual or potential spill of a CWA hazardous substance or oil shall be responsible for reporting the spill. Then, the employee should immediately alert nearby workers and leave the area of the spill, then notify supervision of the spill. If a supervisor is not available, pull the nearest fire alarm or notify the Communications Center. If possible, when reporting the spill, the employee should report the location of the spill, identity of substance (if known), any personnel injuries or unusual conditions, the source of the spill, whether or not the flow has stopped, and approximately how much material was spilled.

Then if the employees safety will not be impaired by the spill or release the employee can fight or control the incident using the procedures described below; otherwise, the employee should wait until the Emergency Response Team arrives and let them fight or control the spill or release. The supervisor or ERT should place barricades with restrictive signs around the affected area to prevent personnel not associated with cleanup from entering the area. Before attempting to contain the leaking substance, ensure that the necessary spill cleanup supplies are readily available. Stop the flow of the leak by turning the container so that the leaking area is above the substance level. Steps should then be taken to patch the leak, if possible, using one or more of the methods described in Operating Procedure 20-C-606. Then, create dikes at the edges of the spill, utilizing chemically inert sorbent materials such as vermiculite, diatomaceous earth, sand, sorbent pigs, or an equivalent, to contain the spilled substance to the immediate area. Prevent the oil or CWA hazardous substance from entering a drain or manhole by covering the drain or manhole with plastic, rubber sheet, plywood, or equivalent, and building diking materials around the edges and top of plastic, rubber sheet, or plywood using pigs, absorbent, etc.

If the employee who discovered has not already done so, the supervisor should report the spill to the Communications Center and the Assistant Emergency Duty Officer (AEDO) stating the information listed above, such as location of the

spill, etc. The supervisor should also notify the plant or area manager of the event. The appropriate staff manager at the FMPC will be notified by the plant or area manager.

An Unusual Event form including as much information as is available will be completed by the Communications operator. The AEDO will log and classify the event following the "Duty Officer Guideline Procedure," and the FMPC Emergency Plan. The Emergency Duty Officer (EDO) will be notified of a reportable non-routine or an unusual event by the AEDO. Necessary information concerning a spill will be provided by the AEDO to the EDO and designated Environmental Compliance (EC) Spill Reporting Adviser to determine if a potentially reportable event must be reported to offsite agencies and regulatory agencies

The EDO will direct Industrial, Radiological, Safety, and Training (IRS&T) to assign an Industrial Hygiene and Safety and/or Radiological Safety technician to perform further monitoring and analysis of the spill, as necessary. Also, the EDO will activate the Emergency Response Team (ERT), if necessary, by contacting the Emergency Chief. The Emergency Chief will assemble and direct the Emergency Response Team to the incident based on information provided by the Communications Operator or the AEDO. He will direct and coordinate the field response, reporting to the AEDO.

The EDO will advise the AEDO and oversee the spill response. Either the EDO or AEDO will contact the Environmental Compliance (EC) Spill Reporting Advisor, to determine if the event is reportable to regulatory agencies such as the EPA. The Spill Advisor will classify a spill as reportable to regulatory agencies, and advise the EDO of this determination. Finally, one of the methods (neutralization or adsorption) described in Operating Procedure 20-C-606 can be used for cleaning up spilled substance under proper supervision.

3.8.4 Secondary Countermeasures

The following secondary countermeasures described in the following paragraphs can be employed to prevent the spilled substance from reaching a navigable

water. As explained in Section 2.3.3, the stormwater from the process area flows by gravity flow to Manhole 34. A low flow dam in the 60-in. diameter storm sewer downstream of MH 34 diverts normal drainage into the wetwell of the Storm Sewer Lift Station (SSLS). Area Code Number (area location) 22B on Figure 2-2 is the location of the Lift Station Pumphouse. Upon detection of such a spill event, the shift supervisor would immediately notify the Water Treatment Plant, the Utility Engineer, Assistant Emergency Duty Officer (AEDO) and the Emergency Duty Officer (EDO). The Water Treatment Plant operator and the on-duty Utility Engineer would take the necessary steps to divert the discharge of the SSLS to the General Sump. The SSLS pumps can thereby transfer the oil or CWA hazardous substance to the General Sump for proper treatment before discharge to MH 175.

During high precipitation periods, or if the General Sump does not have the tank capacity, the SSLS pumps can be shut down and the oil or CWA hazardous substance will overflow the dam to the Stormwater Retention Basin (SWRB). The runoff from a spill would be retained in the SWRB until the General Sump could accept it for proper treatment thus, preventing a release of a CWA hazardous substance or oil, to the Great Miami River via MH 175. Figure 2-4 shows a schematic of the FMPC waste stream flows.

The existing concrete retention basins at each of the transformers are large enough to contain the entire oil capacity of the transformer. In the event of oil leakage, unaccompanied by any other event, clean up of the retention basin area would be the only countermeasure necessary. A retention basin is not used at the three circuit breakers because of the relatively small volume of oil contained in the breakers. In the event that an oil release from one of these units occurs, the spill would drain into the bed of crushed limestone underlying the units. Cleanup of the spill, including crushed limestone, would be initiated as soon as possible. Use of this secondary countermeasure is expected to prevent washing of oil and oil residues into the drainage ditch west and south of the Substation.

If a transformer rupture and/or oil spill should occur during a fire or other event which would activate the transformer sprinkler system, oil could be discharged through the retention basin skimmer pipe to the drainage ditch

outside the enclosure. Flow from this ditch does not enter the storm sewer system and diversion capability does not exist. In such an event, oil would be retained on the surface of the retention basin provided in the drainage ditch south of the Substation. The retained oil and contaminated soil must be collected, transferred to suitable containers and handled as a hazardous waste. Any oil that may migrate from the area would also be handled as a hazardous waste.

Should a spill occur in one of these areas, the responsible supervisor would take immediate action to isolate the spill. All residues in the spill area would be removed as quickly as possible to eliminate future washing of residues. The spill area residues will be stored treated, and disposed of in an approved, safe manner consistent with applicable regulations, SOPs, and emergency site procedures.

3.9 Inventory and Level Controls

Inventory control involves the operator inventorying the contents of the tank at least once a month to ensure the FMPC that this tank is not leaking. In some cases this is done more than once a month. This involves comparing a quantity (gallons) of substance used for a process operation during the month against the remaining quantity of substance left in the tank at the end of that month.

Level controls are present in many of the FMPC tanks to prevent overfilling by an operator. Some of the various types of level controls employed at the FMPC are gage board level indicators, sight glasses, high level sensors that generate and transmit an alarm signal to a production control system, Varec level indicator with a float, etc. Also, overflow equalizing lines between tanks so that a full tank can overflow to an adjacent tank (that is empty or not full) is also an acceptable form of level control according to the appropriate regulatory guidelines 40 CFR, Part 112.7. Appendix D has a column which indicates the type of existing level control that is present, if any, to prevent each listed tank from being overfilled by an operator.

4.0 Contingency Plan

4.0 CONTINGENCY PLAN

The FMPCs response to a release of a CWA hazardous substance or oil in order to minimize the effect on plant or off-site personnel and the environment consists of two basic steps:

- Reporting the spill to FMPC response authorities
- Spill corrective actions

4.1 Reporting The Spill To FMPC Response Authorities

Any FMPC employee who discovers a spill shall report it as required by FMPC Site Procedure FMPC 503 "FMPC Spill Incident Reporting and Cleanup." Emergency evacuation from particular buildings or areas can be initiated by the activation of local evacuation alarms from one or more locations in the process area.

4.2 Spill Corrective Actions

It is the policy of the FMPC to ensure that every reasonable precaution is taken to protect employees and off-site personnel. The corrective actions to be taken by specially trained FMPC employees in the event of a spill are listed in the "FMPC Emergency Plan," FMPC Site Procedure FMPC-503, "FMPC Spill Incident Reporting and Cleanup," and plant specific SOPs. For a brief summary of the corrective actions to be taken in event of a spill incident contained in the above referenced supporting documents, see Sections 3.8.3 and 3.8.4 of this plan.

This summary briefly describes the spill reporting chart based on Site Procedure FMPC-503, "FMPC Spill Incident Reporting and Cleanup." The phone number for the AEDO is listed in the above Site Procedure. In the event of a spill, the AEDO will determine if a spill incident requires the activation of the Emergency Operation Center (EOC) and the Joint Public Information Center (JPIC). If the JPIC is activated, public information spokespersons representing the FMPC, Butler and Hamilton counties, the State of Ohio and DOE will assemble at the JPIC located in Fairfield, Ohio, as stated in the FMPC

Emergency Plan. These organizations will be informed of a spill incident at the FMPC according to the FMPC Emergency Plan. These SOPs and Site Procedures mentioned above identify the various departments, agencies, groups, and personnel on-site and off-site necessary to contain the CWA hazardous substance or oil and minimize the environmental insult and risk to plant personnel and the public. A "FMPC Emergency Response Unit" is available with the emergency response supplies listed in Table 6-1 and responds to all potential chemical releases at the FMPC. Some of the emergency response supplies stored in various plant locations at the FMPC are patches, plugs, large plastic bags, diking materials, sorbents, plastic shovels, pails, pigs, absorbent pads, vermiculite, and other miscellaneous tools. Radiological Safety personnel also respond to all spills to address potential contamination concerns. Also, a Supersucker Industrial Vacuum Loader is now available at the FMPC to respond to spills and can be used in the cleanup of a spill if necessary.

A description of specific subjects that are discussed in the FMPC Emergency Plan are briefly described in the following paragraphs. The FMPC Emergency Plan defines the methods the FMPC uses to respond to an emergency, and specifies (through text and charts) the criteria for assigning a particular classification level to an event or spill and the spectrum of indicated responses. It also identifies those people responsible for classifying an event.

As described in the FMPC Emergency Plan, emergency response requires an organization with specific emergency responsibilities that are separate from those of the normal operational organization. A specific number of emergency personnel are required on-site for all shifts. An Emergency Response Team with command, firefigthing, search and rescue, emergency medical, radiological and CWA hazardous substance monitoring, and response capability is mobilized from shift employees when required. A management organization in the Emergency Operations Center (EOC) is also mobilized when necessary. The emergency organization employs the one person/one job philosophy. Events may require the activation of off-site organizations (such as EPA and other state and local government agencies) by the DOE. Interfaces with off-site support agencies are specified. As indicated above, this Plan describes: 1) those

organizations and people with responsibilities for emergency response; 2) the FMPC emergency organization; 3) specific responsibilities of the FMPC personnel.

The Concept of Operations in this Plan provides an overview of emergency response activities (including field response and EOC activities). Logic diagrams illustrate the flow of information, actions, decisions, and assessments for general emergency response. Then, the narrative explains this information in greater detail. Departmental emergency procedures expand on this "general emergency response procedure." The logical sequence of events during an emergency includes 1) event discovery and response initiation, 2) event classification, 3) emergency response (principally from the field), 4) emergency management (principally from EOC), and 5) event termination, close-out, and recovery.

The Facilities and Equipment section of the FMPC Emergency Plan describes some of the tools used to respond to and manage emergencies. For emergency response to be successful, the components (people, tools, and procedures) must be tested and improved. Emergency preparedness brings the components together in simulated emergency conditions (drills and exercise) to allow practice and to test these capabilities. These simulated tests also involve outside agencies.

The Emergency Plan Review Committee and the Emergency Preparedness staff ensure the readiness and continual enhancement of the essential components of emergency preparedness. Emergency management documents, including emergency analyses, plans, and procedures, are reviewed and revised according to established schedules. Appraisals and audits are provided by DOE Headquarters, the DOE Oak Ridge Operations Office, and the FMPC Emergency Planning Review Committee to assure the proper and immediate response in the event of an emergency.

5.0 Spill / Release Evaluation

5.0 SPILL/RELEASE EVALUATION

The SPCC Plan must include predictions of the total quantity of CWA hazardous substances, oils, or PCBs that could be released to the environment in the event of a major spill; direction of the spill travel; and the rate of spill flow according to 40 CFR, Part 112.

5.1 Quantity of CWA Hazardous Substance, Oil, or PCB That Could Be Released

The total quantity of a CWA hazardous substance (volume greater than RQ), oil or PCB that could be released is that which is contained in the individual primary containments. A summary of the contained quantity of CWA hazardous substance (volume greater than RQ), oil, or PCB in each primary containment is provided in Appendix D.

5.2 Direction of Spills

During normal plant operation, a major spill occurring in the process area will be directed through the storm sewer system to the storm sewer lift station at Manhole 34 (see Figure 5-1). If a CWA hazardous substance, oil, or PCB spill is not diverted or controlled at MH 34, it will be pumped by the SSLS through a 12 inch force main approximately 2400 feet to MH 175. Note that the 12 inch force main is a common discharge for several other flows besides the SSLS (see Figure 2-4). These other flows include the General Sump, the SWRB and the BDN-ETS (beginning in late 1990).

Once the spill flow would reach MH 175, it would be combined with the discharge from the STP. The combined flow would then discharge by gravity through a 16 inch sewer approximately 4,150 feet to the Great Miami River.

During a storm event situation, the CWA hazardous substance spilled would likely overflow the diversion dam in the 60 inch storm sewer. The spilled substance would flow to, and be contained in, the Storm Water Retention Basin (SWRB) until remedial actions to recover and treat the substance are

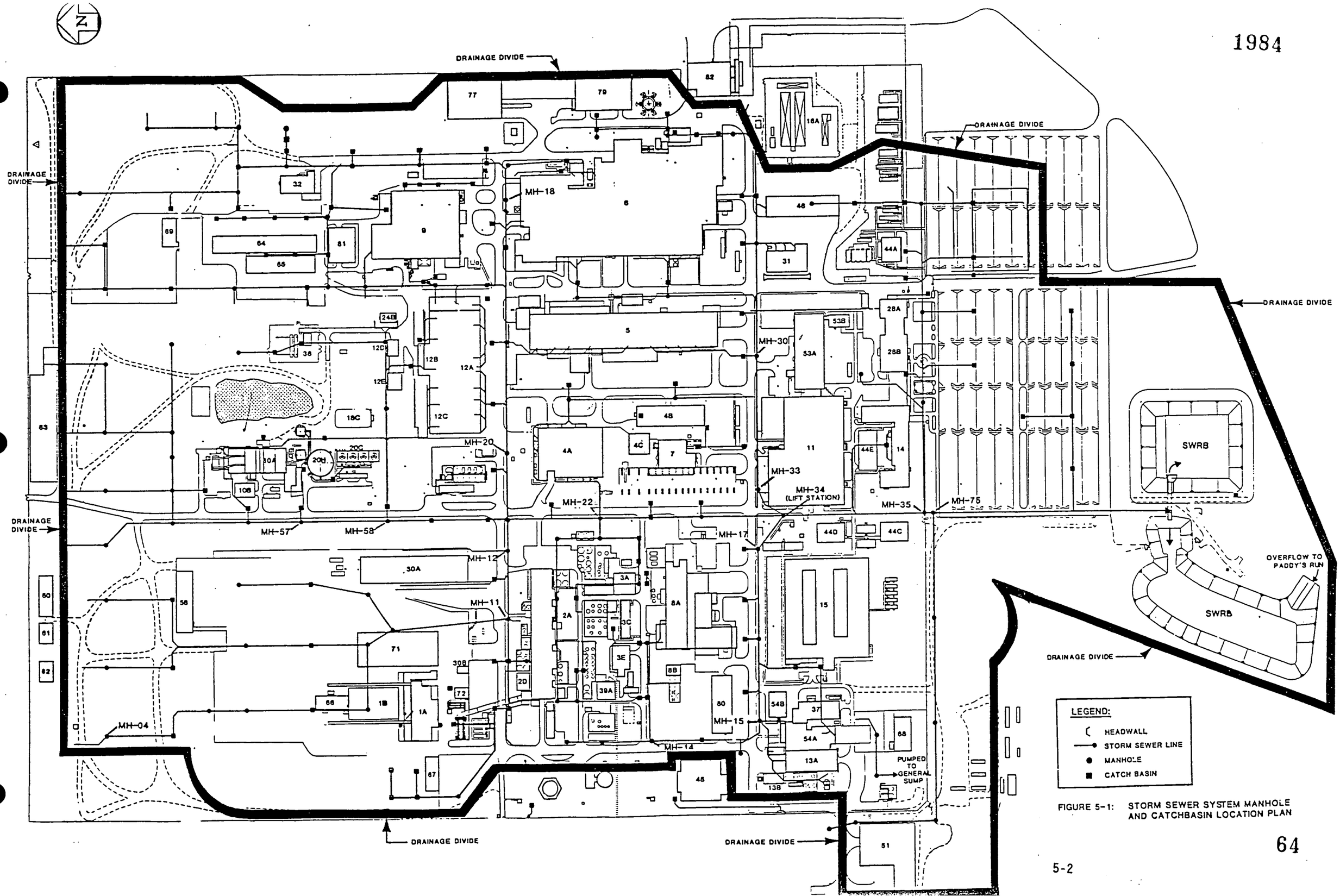


FIGURE 5-1: STORM SEWER SYSTEM MANHOLE AND CATCHBASIN LOCATION PLAN

initiated. With the recent expansion of the SWRB to two chambers (as explained in Section 6), the spill is capable of being isolated in one of the chambers until it can be treated in place or pumped back to the General Sump for treatment.

A project is planned (see Section 6) that will discontinue the discharge of the SSLS to MH 175 so that any future spill would automatically be contained in the SWRB. However, for this analysis, the SSLS is assumed to operate as it does at this time. At the present time, all active areas of the process area (shown in Figure 5-1) drain to the storm sewer system. A project is under design (see Section 6) which will expand the area draining to the SWRB to include all of the fenced in process area.

5.3 Rate of Spill Flow

Below is an assessment of the occurrence of a spill event during the following scenarios: 1) low flow: the spill occurs during a nonprecipitation period in which dilution of the spilled substance with storm water is minimized and response time is maximized; and 2) high-flow: the spill occurs during a major rainfall event and, although the spilled substance is diluted with storm waters, the response time is reduced. The analysis does not include discharges to the SWRB. In the event that a spill reaches the SWRB during a period when the capacity of the basin is exceeded, the spill would mix with the 10.2 million gallons of water in the SWRB. After mixing with the basin contents, it is possible that some of the diluted spill would discharge from the SWRB to Paddy's Run via the Storm Sewer Outfall Ditch.

Full flow/pipe calculations are based on Manning's equation. Partial flow calculations were performed using the methods derived from approved standards for hydraulics and hydrology Soil Conservation Services National Engineers Handbook (SCS-NEH, 1972), Section 4. Flow restrictions due to elbows, bends, manholes and any other restrictions have been neglected. For the purpose of this analysis, it was assumed that: 1) the storm sewer system piping is constructed of concrete and the Manning's roughness factor "n" is applied accordingly; 2) the rate at which a spill enters the storm drain system is controlled by the size of the pipe that first received the spill, and this

rate is the maximum this size pipe can carry at full flow; 3) the overland flow travel time from the location of the spill to the catchbasin (CB) or manhole was assumed to be negligible.

For the low-flow analysis, the minimum flow in the storm sewers was assumed to be an average flow of 110 million gallons per year (MGY) or 0.47 cubic feet per second (cfs) from infiltration and inflow. (Dames & Moore, 1986). It is unknown how much of the infiltration and inflow originates at the point where a spill may occur. It was assumed that the pipe that first received the spill has no infiltration and inflow. Therefore, at the point of spill entry, the storm drain is filled to capacity with the spill effluent. As the flow travels through the storm drain system, the pipes increase in size and pick up infiltration and inflow from other areas. These low-flow travel times assume that the total 0.47 cfs is not added to the spill substance until the storm drain pipe is large enough to carry the volume of the flow from the spill plus the 0.47 cfs from infiltration and inflow.

High-flow travel times are calculated based upon the maximum velocity which could occur in each sewer section based on the slope of the section. The maximum pipe velocity occurs at approximately 83% total depth of flow and is approximately 110% full flow velocity (Daugherty, 1977).

While travel times from individual tanks to MH 34 have not been addressed, estimates of travel time from six manholes or catch basins to MH 34 have been calculated. The locations of the identified manholes and catchbasins are shown on Figure 5-1. The manholes and catchbasins chosen are located centrally to the drainage provided for the Plant 1 Storage Pad, the Tank Farm, Plant 2/3, Plant 8, the General Sump, and Buildings 5 and 6. A summary of the travel time estimates from the selected manholes and catchbasins to MH 34 during low-flow and high-flow conditions is shown in Table 5-1. The travel time estimates represent the range of time plant personnel have to respond to and contain the spill within the storm sewer system and reroute the flow to the General Sump or divert it to the SWRB.

Once the spill reaches MH 34, it would be pumped into the 12 inch force main and combined with other flows as explained previously (see Figure 2-4). The low flow in the 12 inch main is assumed to be 500 gallons per minute (gpm)

from the SSLS. This assumes that the intermittent discharges from the General Sump and SWRB are not operating. Peak storm water flow to MH 175 was assumed to be 1000 gpm. This consists of 500 gpm from the SSLS, plus 300 gpm from the SWRB, plus 200 gpm from the General Sump. Low-flow and high-flow conditions at MH 175 are best professional judgments based on the engineers' knowledge of the system.

Based on the above engineering judgment, the low-flow travel time from MH 34 to MH 175 would be 28.4 minutes and the high-flow time would be 14.1 minutes.

Assuming that an additional 150 gpm of flow is added to MH 175 from the STP during both low and high-flow conditions, the travel time from MH 175 to the Great Miami River (GMR) would be 23 minutes and 20 minutes respectively. A summary of the calculations representing travel times to the Great Miami River is provided in Appendix G. Combining the three travel time estimates (individual CB or MH to MH 34 plus MH 34 to MH 175 plus MH 175 to the GMR) represents an approximation of the amount of time to take appropriate response actions and notify the proper authorities and develop contingency plans to contain and/or treat a spill at the Great Miami River, if the spill cannot be caught before it reaches MH 175. Because of storage capacity available in the BSL, the General Sump and the SWRB, it is reasonable to assume that all pumping could be stopped and a spill could be controlled onsite up to the time required for the spill to reach MH 175.

Table 5-1

Summary of Travel Time Estimates

From	To	Low Flow Time (min.)	High Flow Time (min.)
MH 10	MH 34	5 min.	4 min.
CB 10	MH 34	7 min.	3 min.
CB 25	MH 34	7 min.	2 min.
CB 35	MH 34	3 min.	2 min.
CB 82	MH 34	6 min.	3 min.
CB 100	MH 34	8 min.	3 min.
MH 34	MH 175	28 min.	14 min.
MH 175	GMR	23 min.	20 min.

Note: A summary of the calculations to determine the above travel time estimates is provided in Appendix G.

6.0 Improvements

6.0 IMPROVEMENTS

In revising the SPCC Plan, for the FMPC, several improvements were noted since issuance of the previous plan (FMPC-2065). Several improvements were also noted as being planned in projects presently under design.

6.1 Improvements since January 25, 1987

The following improvements have been accomplished at the FMPC since January 25, 1987:

(1) Spill Response-Vehicle - A "FMPC Emergency Response Unit" has been purchased which responds to all potential chemical release emergencies. The vehicle is stocked with the emergency response supplies listed in Table 6.1. The supplies on the "FMPC Emergency Response Unit" are inspected weekly by Industrial Radiological Safety and Training (IRS&T). The major benefit of the FMPC Emergency Response Unit is that the FMPC now has a vehicle that was designed to respond to and assist in containing all potential CWA hazardous substance, oil, or PCB release emergencies. Accordingly, the emergency response supplies listed in Table 6.1 are supplies and equipment which may be needed to contain or control a spill. These supplies are the ones that will provide the FMPC with the ability to control any spill from a primary containment or secondary containment area until more permanent help can be received from other FMPC Departments such as Maintenance.

(2) Environmental Compliance Spill Reporting Advisor - The position of Environmental Compliance Spill Reporting Advisor was recently created. The Environmental Compliance Spill Reporting Advisor is responsible for advising the Emergency Response Team Leader and management at the FMPC on the reportability of spill incidents to regulatory agencies.

(3) Kerosene Underground Storage Tank Removal - The underground storage tank previously used for storing kerosene at the Tank Farm was removed during a recent upgrade at the FMPC.

Table 6-1

Spill Response Supplies for the FMPC Emergency Response Unit

Confined Space Rescue Winch
Confined Space Rescue Tri-pod-2
Screw Clamps
Tape Measures-3
Pad Locks-3
Wire Brushes-2
Rubber Mallets-2
Flashlights
Screwdrivers
Plastic Bags
Clipboard
Dry-erase Markers
Eraser
Pens/Pencils
Note Pads
Rubber Bands
Butterfly Clamps
Knives-5
Bung Wrench
Reference Books
NIOSH Pocket Guide To Chem. Hazards
ACGIH TLV Book
Electrical Tape
Banner Guard Tape
Strapping Tape
Masking Tape
Rain Ponchos
Roll of Plastic
Sanitizing Solution
Comet Cleanser
Sponges And Brushes
Rubber Buckets-4
Kim-Wipes
Monogoggles-6
Nylon Rope
Glassine Envelopes
Filter Paper
Vermiculite
Wood Decontamination Dikes
Brooms-2
Squee Gees-2
Long Pry Bar
Spool Of Wire
Tyvek Suits
Ballpeen Hammer
Ground Clamp
Channel-Lock Pliers
Acid Suits-4
Paper Clips
Center Punch
Flat Files-2
Cutting Pliers
Yellow Vinyl Tape
pH Paper
Radio (2 way)
Black Markers
Air Sampling Cassettes
Charcoal Tubes
Mercury Tubes
Adjustable Wrench
Assorted Nuts And Bolts
Sample Jars
Splash Suits-5
Rubber Mat
Ice Packs
Cool Vest
Hot Mitten Gloves
Leather Gloves
Cotton Gloves
Latex Gloves
Neoprene Gloves
Red "Monkey Grip" Gloves
Black Rubber Elbow Gloves
Glove Retaining Rings
Drager Kit
ELSA
60 Minute Air Bottles
Decontamination Pools
Pool Air Fill Device
Shower Sandals
Emergency Lights for Vehicle
Plug-N-Dike Bucket
Tarps-2
Micro Max Pumps-2
Square Shovels-2
Long Handle Brush
Pylons
Saranex Suits

Table 6-1 (Continued)

Spill Response Supplies for the FMPC Emergency Response Unit

Bone Mics-2
SCBAs-2
Decontamination Posts
Lens Cleaner
MSA FF Respirators
Ammonia Canisters-6
Ammonia Cartridges
Combination Cartridges
Fully Encapsulating Saranex Suits
Absorbent Pads
Full Body Harness
Bucket "Pigs" Material
Confined Space Ventilator And Hose
North And MSA Half Mask Respirators
Hazardous Materials Response Kit
Throat Mics-2
SCBA Facepieces-2
Hard Hats
No Fog Wipes
Fire Extinguisher
HF Canisters-6
Organic Vapor Cartridges
Mersorb Mercury Cartridges
Absorbent Pillows
"Pigs" Absorbers
Wrist Harness
200 lbs Sand
6.5 K Generator

(4) Stormwater Retention Basin (SWRB) Expansion - The original 6.3 million gallon SWRB was installed in late 1986. The purpose of the Retention Basin was to minimize stormwater discharge to Paddy's Run. The secondary purpose is to contain spills from the process area that are collected by the storm sewer system.

An expansion of the SWRB was completed on December 28, 1988. The expanded FMPC Stormwater/Spill Retention Basin provides a two-chambered facility with a design capacity of approximately 10.2 million gallons. The expanded SWRB uses a sluice with half height control gates to control the runoff. Under normal conditions, while the runoff flow is directed to one chamber, the other chamber is allowed to remain in a quiescent condition for 24 hours of settling before being pumped to Manhole 175. After the quiescent chamber has been pumped down, the gates are reversed and the process is repeated. If a spill entering the storm sewer system enters the SWRB, it is possible, under normal conditions, to isolate the spill in one of the two chambers. The spill can then be treated or sent to the General Sump or BSL for treatment while stormwater is directed to the second chamber.

A major benefit that the FMPC received from the SWRB is that it significantly reduces the possibility that a potential spill of an oil or a CWA hazardous substance that gets into the storm sewer will reach a navigable water. It also provides the FMPC with a method to recover and treat any effluent affected by a spill of an oil or a CWA hazardous substance before it reaches a navigable water.

(5) Upgrade of Secondary Containment Areas - Some secondary containment dikes have been upgraded. This includes replacement with new facilities as in the case of the new Receiving/Incoming Materials Inspection Building or upgrades such as secondary containment areas 1, 3, 4, 8, 10, 13, 18, 20A, 21, 22, 23, 25, and 27. A new receiving facility (Receiving and Incoming Materials Inspection Building) was built on the southeast side of the process area. This facility was designed with an internal diked area and spill control diking around the dock area. An analysis of this facility is provided in Appendix E.

(6) Tank Farm Renovation - This project consisted of the replacement of existing tanks in the FMPC Tank Farm or relocation to new tanks at the new South Ammonia Storage Facility, and Tributyl Phosphate & Kerosene Areas. These sites are also provided with unloading and storage facilities. Containment diking for both the unloading areas and the storage tanks are being provided. The Main Tank Farm also contains a facility to neutralize any acidic wastewaters and stormwater runoff prior to being pumped to the General Sump.

The major benefits that the FMPC will realize from the Tank Farm Renovation is that the primary containments, secondary containment areas, and loading and unloading station has been designed according to applicable regulatory guidelines stated in 40 CFR, Part 112.7. Also, the secondary containment area will prevent a spill, if one occurs, from getting into the storm sewer and thus, possibly from going to a navigable water. Finally, the Tank Farm Renovation involved removing the underground kerosene storage tank as discussed previously.

South Ammonia Storage Facility - Two twenty thousand gallon tanks were installed to place the Ammonia storage near the point of use. This decreased the risk of leakage between the Main Tank Farm and Pilot Plant or the abandoned UF_6 to UF_4 building. The new secondary containment area and loading and unloading station was designed and built according to applicable regulatory guidelines stated in 40 CFR, Part 112.7.

Tributyl Phosphate & Kerosene Area - The tributyl phosphate and kerosene were stored in bulk at the Main Tank Farm. The storage for these substances was moved near the Refinery to decrease the risk of leakage between the Main Tank Farm and the Refinery. Two existing tanks in a diked area were renovated for this use at the Refinery.

(7) New Gasoline Tanks at Garage - The gasoline used in the on-site vehicles was previously stored in underground storage tanks. In response to heightened regulations, these tanks were emptied. In the future, these tanks

will be removed and replaced with new storage tanks. Tanks with temporary secondary containment have been installed until permanent facilities are constructed.

(8) Industrial Vacuum Loader - An Industrial Vacuum Loader (Supersucker Model 4017) has been purchased by the FMPC which can respond to potential release emergencies. This vehicle will be used if necessary for cleanup of spills. The industrial vacuum loader has been designed to operate in either a wet or dry mode and has the ability to operate in a corrosive environment.

6.2 Planned Improvements

The following SPCC improvements are being planned in projects presently under design:

(1) Process Area Stormwater Runoff Control - Projects planned to improve process area runoff control include increasing the pumpout rate at the SWRB, shutdown of SSLS discharge to MH 175 and SSLS upgrade for spill control.

Increase Pumpout Rate at Stormwater Retention Basin (SWRB) - An increased pump out rate will be obtained at the SWRB by installing larger flow pumps. This will reduce the time required to empty the SWRB to the Great Miami River and lower the probability of SWRB overflow and increase the time that the SWRB water level remains below the level of the half gates to increase spill control capability. This increased rate is designed to allow for the shutdown of the SSLS pumps.

Shut Down of SSLS Discharge to MH 175 - After the increased pumpout capacity at the SWRB has been completed, the discharge of the SSLS to Manhole 175 will be discontinued. All stormwater runoff will then be sent to the SWRB for quiescent settling before being discharged to Manhole 175. By shutting down the SSLS discharge to MH 175, the FMPC will significantly improve its ability to prevent a spill from going to a navigable water.

SSLS Upgrade for Spill Control - This project will provide dedicated piping from the SSLS (and SWRB) directly to the General Sump for processing spills collected by the storm sewer system. At the present time, existing dual service lines with manually operated valves must be rearranged to accomplish this action. This task will also provide motorized control of the two SWRB inlet gates to provide control to direct process area stormwater runoff to either the east or west chambers of the SWRB. The reason for the SSLS upgrade is to provide the FMPC with a method to intercept spills in the storm sewer system before they enter the SWRB.

(2) Storm Sewer Improvements - Additional process areas presently discharging to Paddy's Run (see Figure 5-1) will be controlled and directed to the SWRB. This effort will reduce the possibility of a spill occurring in the process area from reaching Paddy's Run.

(3) Underground Storage Tank Removal - All of the remaining underground storage tanks at the FMPC have been removed from service and are scheduled to be removed in the near future.

The FMPC currently has thirteen (13) Underground Storage Tanks (USTs) of which twelve (12) are regulated by 40 CFR, Part 112 (SPCC Regulations) and one (1) is regulated by 40 CFR, Part 265 (RCRA Regulations). Ten (10) of these tanks will be excavated and closed out per Ohio State Fire Marshal Requirements. One (1) tank will be abandoned in place per Ohio State Fire Marshal Requirements. One (1) tank will be removed according to RCRA Regulations. One (1) tank was discovered in April of 1990 and its disposition has not been determined. This tank could possibly contain a hazardous waste and thus will be regulated by RCRA Subtitle C. The underground storage tank previously used for storing kerosene at the Tank Farm was removed during a recent upgrade at the FMPC. By removing this underground storage tank, and eleven (11) additional remaining tanks that are not being used, the FMPC will benefit by removing a potential source for a spill from these tanks that could have possibly reached navigable waters. Also, the FMPC benefits financially by removing these tanks since they will not have to incur the cost of incorporating such devices as level controls and corrosion protection for

these tanks. Since the FMPC will remove these tanks, they will not have to be included in the SPCC Plan. Appendix D contains a list of all USTs located at the FMPC.

(4) Upgrade of Secondary Containments - Some existing secondary containment dikes surrounding various CWA hazardous substance and fuel storage tanks at the FMPC are in need of upgrades to provide the desired containment capacity as stated herein. These dikes are listed in Appendix E. A project to upgrade these dikes where applicable is in the conceptual design phase. Only those secondary containment systems required for the No-Metals Production Scenario listed in the "Scopes Of Work To Upgrade Secondary Containment Systems," letter will be upgraded. A copy of this letter along with suggested upgrades for all applicable secondary containment systems can be found in Appendix H. Upgrading will consist of increasing containment capacities to retain the contents of the largest tank plus an allowance for accumulated precipitation for a 25-year, 24-hour storm event. Concrete patching and lining of the floors and walls with materials that are impermeable and non-reactive with the substances being stored will be provided where deemed necessary. The above letter describes the actions to be taken to remove various tanks from service that will not be needed during the "No-Metals Production Scenario" so that the secondary containment systems for these tanks will not need to be upgraded.

(5) Oil-In-Stormwater Measurements - The FMPC has recently purchased a Great Lakes Instruments, Inc. Model 8800-series turbidimeter that will be installed on the discharge to the SSLS. This instrument is capable of measuring undissolved and emulsified oil in water. Turbidimeter instruments will, however, detect all suspended particles which cause scattered light. The measurement time for the turbidimeter is in seconds or minutes. This device will be used at the FMPC to attempt to detect any oil spills that reach the storm sewer system so that corrective actions can be taken in a timely manor.

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APPENDIX A

REGULATORY BACKGROUND

APPENDIX A

REGULATORY BACKGROUND

Discharges of oils and CWA hazardous substances into the navigable waters of the United States are expressly prohibited by Section 311 (b) (3) of the Federal Water Pollution Control Act (FWPCA), as amended by the Clean Water Act (CWA). Section 311 (j) (1) of the FWPCA mandated the issuance of regulations establishing "procedures, methods, and equipment and other requirements for equipment to prevent discharges of oil and CWA hazardous substances from primary containment systems." The Environmental Protection Agency (EPA) subsequently promulgated Federal regulations defining harmful discharges of oils and PCBs and, spill prevention control of oils and PCBs in 40 CFR, Parts 110, 112, and 761. Regulations addressing discharges of CWA hazardous substances other than oils or PCBs were proposed in 1978 (40 CFR Part 151), but were not promulgated. The following chapters of Title 40 of the CFR reference SPCC Plan preparation and implementation or SPCC-related issues.

A.1 40 CFR Part 110 - Discharge of Oil

40 CFR Part 110 provides the primary definition of harmful discharges of oils and prohibits the release of oils into the navigable waters of the United States. Discharges determined to be harmful include those which violate applicable water quality standards and those which "cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines."

A.2 40 CFR Part 112 - Oil Pollution Prevention

These regulations provide for the preparation and implementation of spill prevention control plans and are intended to complement other laws, regulations, rules, standards, and policies pertaining to safety standards and fire prevention. The regulations seek to achieve

"fail-safe" engineering and installation procedures for tanks and other storage containers at facilities that reasonably can be expected to discharge oils; however, significant emphasis is placed on prevention of a spill occurrence through the evaluation of past spill history from facilities that have experienced a spill throughout the United States.

A.3 40 CFR Part 116 - Designation of Hazardous Substances

40 CFR, Part 116 designates CWA hazardous substances under authority of Section 311(b)(2)(A) of the Federal Water Pollution Control Act (FWPCA), as amended by the CWA.

A.4 40 CFR Part 117 - Determination of Reportable Quantities for Hazardous Substances

These regulations designate specific RQs for the CWA hazardous substances listed in 40 CFR Part 116. Any discharge of a CWA hazardous substance over a 24-hour period in excess of the RQ of the constituent must be reported to the National Response Center. The RQs referenced in 40 CFR Part 117 are listed as either 1, 10, 100, 1000, or 5000 pounds.

A.5 40 CFR Part 125, Subpart K - Criteria and Standards for Best Management Practices

These regulations require incorporation of Best Management Practices (BMPs) into industrial operations conducted in accordance with a NPDES permit. A facility should specifically incorporate SPCC Plans designed to prevent discharges of oils, PCBs, and designated CWA hazardous substances into its BMP program.

APPENDIX A

A.6 Proposed 40 CFR 151 - Hazardous Substances Pollution Prevention

The EPA issued proposed rules on September 1, 1976 requiring preparation of SPCC Plans to prevent discharges of CWA hazardous substances other than oil from facilities subject to NPDES permitting requirements. These proposed regulations parallel the EPAs oil pollution prevention regulations established in 40 CFR Part 112. To date, the EPA has not promulgated these regulations. Furthermore, it is not clear whether the EPA will finalize or revise the 40 CFR Part 112 oil pollution regulations to include other CWA hazardous substances.

A.7 40 CFR Part 761, Subpart D - PCB Storage and Disposal

This regulation requires the operator or owner of a facility storing liquid PCBs for future disposal to prepare SPCC Plans in accordance with 40 CFR Part 112.

APPENDIX B

REGULATORY CROSS-REFERENCE

1984

APPENDIX B

Regulation	Text Section
40 CFR 112.7 (a)	
40 CFR 112.7 (b)	Section 5.0 and Appendix D
40 CFR 112.7 (c)	Section 3.8
40 CFR 112.7 (d)	Section 4.2
40 CFR 112.7 (e) (1) (i)	Section 3.4
40 CFR 112.7 (e) (1) (ii)	N/A
40 CFR 112.7 (e) (1) (iii)	Section 5.0
40 CFR 112.7 (e) (1) (iv)	Section 5.0
40 CFR 112.7 (e) (1) (v)	Section 5.0
40 CFR 112.7 (e) (2) (i)	Section 3.4 and 3.5
40 CFR 112.7 (e) (2) (ii)	Section 3.4 and 3.5
40 CFR 112.7 (e) (2) (iii)	Section 3.4 and 3.8
40 CFR 112.7 (e) (2) (iv)	N/A
40 CFR 112.7 (e) (2) (v)	N/A
40 CFR 112.7 (e) (2) (vi)	Section 3.4 and 3.5
40 CFR 112.7 (e) (2) (vii)	N/A
40 CFR 112.7 (e) (2) (viii)	N/A
40 CFR 112.7 (e) (2) (ix)	Section 5.0
40 CFR 112.7 (e) (2) (x)	Section 5.0
40 CFR 112.7 (e) (2) (xi)	Section 5.0
40 CFR 112.7 (e) (3) (i)	N/A
40 CFR 112.7 (e) (3) (ii)	N/A
40 CFR 112.7 (e) (3) (iii)	N/A
40 CFR 112.7 (e) (3) (iv)	N/A

APPENDIX B

Regulation	Text Section
40 CFR 112.7 (e) (3) (v)	Section 3.6
40 CFR 112.7 (e) (4) (i)	Section 3.8
40 CFR 112.7 (e) (4) (ii)	Section 3.8
40 CFR 112.7 (e) (4) (iii)	Section 3.8
40 CFR 112.7 (e) (4) (iv)	Section 3.8
40 CFR 112.7 (e) (5)	N/A
40 CFR 112.7 (e) (6)	N/A
40 CFR 112.7 (e) (7)	N/A
40 CFR 112.7 (e) (8)	Section 3.4 and 3.5
40 CFR 112.7 (e) (9) (i)	Section 3.6
40 CFR 112.7 (e) (9) (ii)	N/A
40 CFR 112.7 (e) (9) (iii)	N/A
40 CFR 112.7 (e) (9) (iv)	N/A
40 CFR 112.7 (e) (9) (v)	N/A
40 CFR 112.7 (e) (10) (i)	Section 4.1
40 CFR 112.7 (e) (10) (ii)	Section 4.0
40 CFR 112.7 (e) (10) (iii)	Section 4.1
40 CFR 761.65 (c) (1) (iv)	Section 2.2.2.2

1984

Appendix C
Reportable
Quan. Under (CWA)

APPENDIX C

REGULATORY REPORTABLE QUANTITIES UNDER THE CLEAN WATER ACT (CWA)

APPENDIX C

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Acetaldehyde (75-07-0)	C	1,000 (454)	X	
Acenaphthylene (208-96-8)	D	5,000 (2,270)		X
Acenaphthene (83-32-9)	B	100 (45.4)		X
Acetic acid (64-19-7)	D	5,000 (2,270)	X	
Acetic anhydride (108-24-7)	D	5,000 (2,270)	X	
Acetone cyanohydrin (75-86-5)	A	10 (4.54)	X	
Acetyl bromide (506-96-7)	D	5,000 (2,270)	X	
Acetyl chloride (75-36-5)	D	5,000 (2,270)	X	
Acrolein (107-02-8)	X	1 (0.454)	X	X
Acrylonitrile (107-13-1)	B	100 (45.4)	X	X
Adipic acid (124-04-9)	D	5,000 (2,270)	X	
Aldrin (309-00-2)	X	1 (0.454)	X	X
Allyl alcohol (107-18-6)	B	100 (45.4)	X	
Allyl chloride (107-05-1)	C	1,000 (454)	X	
Aluminum sulfate (10043-01-3)	D	5,000 (2,270)	X	
Ammonia (7664-41-7)	B	100 (45.4)	X	
Ammonium acetate (631-61-8)	D	5,000 (2,270)	X	
Ammonium benzoate (1863-63-4)	D	5,000 (2,270)	X	
Ammonium bicarbonate (1066-33-7)	D	5,000 (2,270)	X	
Ammonium bichromate (7789-09-5)	C	1,000 (454)	X	
Ammonium bifluoride (1341-49-7)	B	100 (45.4)	X	
Ammonium bisulfite (10192-30-0)	D	5,000 (2,270)	X	
Ammonium carbamate (1111-78-0)	D	5,000 (2,270)	X	
Ammonium carbonate (506-87-6)	D	5,000 (2,270)	X	
Ammonium chloride (12125-02-9)	D	5,000 (2,270)	X	
Ammonium chromate (7788-98-9)	C	1,000 (454)	X	
Ammonium citrate dibasic (3012-65-5)	D	5,000 (2,270)	X	
Ammonium fluoborate (13826-83-0)	D	5,000 (2,270)	X	
Ammonium flouride (12125-01-8)	B	100 (45.4)	X	
Ammonium hydroxide (1336-21-6)	C	1,000 (454)	X	
Ammonium oxalate (6009-70-7)	D	5,000 (2,270)	X	
Ammonium silicofluoride (16919-19-0)	C	1,000 (454)	X	
Ammonium sulfamate (7773-06-0)	D	5,000 (2,270)	X	
Ammonium sulfide (12135-76-1)	B	100 (45.4)	X	
Ammonium sulfite (10196-04-0)	D	5,000 (2,270)	X	
Ammonium tartrate (14307-43-8)	D	5,000 (2,270)	X	
Ammonium thiocyanate (1762-95-4)	D	5,000 (2,270)	X	
Ammonium thiosulfate (7783-18-8)	D	5,000 (2,270)	X	
Amyl acetate (628-63-7)	D	5,000 (2,270)	X	
Aniline (62-53-3)	C	1,000 (454)	X	
Anthracene (120-12-7)	D	5,000 (2,270)		X
Antimony (7440-36-0)	D	5,000 (2,270)		X

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

APPENDIX C

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Antimony pentachloride (7647-18-9)	C	1,000 (454)	X	
Antimony potassium tartrate (28300-74-5)	B	100 (45.4)	X	
Antimony tribromide (7789-61-9)	C	1,000 (454)	X	
Antimony trichloride (10025-91-9)	C	1,000 (454)	X	
Antimony trifluoride (7783-56-4)	C	1,000 (454)	X	
Antimony trioxide (1309-64-4)	C	1,000 (454)	X	
Aroclor 1016 (12674-11-2)	A	10 (4.54)	X	X
Aroclor 1221 (11104-28-2)	A	10 (4.54)	X	X
Aroclor 1232 (11141-16-5)	A	10 (4.54)	X	X
Aroclor 1242 (53469-21-9)	A	10 (4.54)	X	X
Aroclor 1248 (12672-29-6)	A	10 (4.54)	X	X
Aroclor 1254 (11097-69-1)	A	10 (4.54)	X	X
Aroclor 1260 (11096-82-5)	A	10 (4.54)	X	X
Arsenic (7440-38-2)	X	1 (0.454)		X
Arsenic disulfide (1303-32-8)	D	5,000 (2,270)	X	
Arsenic pentoxide (1303-28-2)	D	5,000 (2,270)	X	
Arsenic trichloride (7784-34-1)	D	5,000 (2,270)	X	
Arsenic trioxide (1327-53-3)	D	5,000 (2,270)	X	
Arsenic trisulfide (1303-33-9)	D	5,000 (2,270)	X	
Asbestos (1332-21-4)	X	1 (0.454)		X
Barium Cyanide (542-62-1)	A	10 (4.54)	X	
Benz[a]anthracene (56-55-3)	X	1 (0.454)		X
Benzene (71-43-2)	C	1,000 (454)	X	X
Benzidine (92-87-5)	X	1 (0.454)		X
Benzo[b]fluoranthene (205-99-2)	X	1 (0.454)		X
Benzo[k]fluoranthene (207-08-9)	X	1 (0.454)		X
Benzo[ghi]perylene (191-24-2)	D	5,000 (2,270)		X
Benzo[a]pyrene (50-32-8)	X	1 (0.454)		X
Benzoic Acid (65-85-0)	D	5,000 (2,270)	X	
Benzonitrile (100-47-0)	D	5,000 (2,270)	X	
Benzoyl chloride (98-88-4)	C	1,000 (454)	X	
Benzyl chloride (100-44-7)	B	100 (45.4)	X	
Beryllium (7440-41-7)	X	1 (0.454)		X
Beryllium chloride (7787-47-5)	D	5,000 (2,270)	X	
Beryllium fluoride (7787-49-7)	D	5,000 (2,270)	X	
Beryllium nitrate (7787-55-5)	D	5,000 (2,270)	X	
BHC (alpha isomer) (319-84-6)	X	1 (0.454)		X
BHC (beta isomer) (319-85-7)	X	1 (0.454)		X
BHC (delta isomer) (319-86-8)	X	1 (0.454)		X
Bis(2-chloroethoxy) methane (111-91-1)	C	1,000 (454)		X
Bis(2-chloroethyl) ether (111-44-4)	X	1 (0.454)		X
Bis(2-chloroisopropyl) ether (108-60-1)	C	1,000 (454)		X
Bis(2-ethylhexyl) phthalate (117-81-7)	X	1 (0.454)		X

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

APPENDIX C

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Bromomethane (74-83-9)	C	1,000 (454)		X
4-Bromophenyl phenyl ether (101-55-3)	B	100 (45.4)		X
Butyl acetate (123-86-4)	D	5,000 (2,270)	X	
Butyl benzyl phthalate (85-68-7)	B	100 (45.4)		X
n-Butyl phthalate (84-74-2)	A	10 (4.54)	X	X
Butylamaine (109-73-9)	C	1,000 (454)	X	
Butyric acid (107-92-6)	D	5,000 (2,270)	X	
Cadmium (7440-43-9)	X	1 (0.454)		X
Cadmium acetate (543-90-8)	B	100 (45.4)	X	
Cadmium bromide (7789-42-6)	B	100 (45.4)	X	
Cadmium chloride (10108-64-2)	B	100 (45.4)	X	
Calcium arsenate (7778-44-1)	C	1,000 (454)	X	
Calcium arsenite (52740-16-6)	C	1,000 (454)	X	
Calcium carbide (75-20-7)	A	10 (4.54)	X	
Calcium chromate (13765-19-0)	C	1,000 (454)	X	
Calcium cyanide (592-01-8)	A	10 (4.54)	X	
Calcium dodocylbenzenesulfonate (26264-06-2)	C	1,000 (454)	X	
Calcium hypochlorite (7778-54-3)	A	10 (4.54)	X	
Captan (133-06-2)	A	10 (4.54)	X	
Carbaryl (63-25-2)	B	100 (45.4)	X	
Carbofuran (1563-66-2)	A	10 (4.54)	X	
Carbon disulfide (75-15-0)	B	100 (45.4)	X	
Carbon tetrachloride (56-23-5)	D	5,000 (2,270)	X	X
Chlordane (57-74-9)	X	1 (0.454)	X	X
Chlorine (75-00-3)	A	10 (4.54)	X	
Chlorobenzene (108-90-7)	B	100 (45.4)	X	X
Chlorodibromomethane (124-48-1)	B	100 (45.4)		X
p-Chloro-m-cresol (59-50-7)	D	5,000 (2,270)		X
Chloroethane (75-00-3)	B	100 (45.4)		X
2-Chloroethyl vinyl ehter (110-75-8)	C	1,000 (454)		X
Chloroform (67-66-3)	D	5,000 (2,270)	X	X
Chloromethane (74-87-3)	X	1 (0.454)		X
2-Chloronaphthalene (91-58-7)	D	5,000 (2,270)		X
2-Chlorophenol (95-57-8)	B	100 (45.4)		X
4-Chlorophenyl phenyl ether (7005-72-3)	D	5,000 (2,270)		X
Chlorosulfonic acid (7790-94-5)	C	1,000 (454)	X	
Chlorpyrifos (2921-88-2)	X	1 (0.454)	X	
Chromium (7440-47-3)	X	1 (0.454)		X
Chromic acetate (1066-30-4)	C	1,000 (454)	X	
Chromic acid (1111-57-45)	C	1,000 (454)	X	
Chromic sulfate (10101-53-8)	C	1,000 (454)	X	
Chromous chloride (10049-05-5)	C	1,000 (454)	X	
Chrysene (218-01-9)	X	1 (0.454)		X

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

APPENDIX C

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Cobaltous bromide (7789-43-7)	C	1,000 (454)	X	
Cobaltous formate (544-18-3)	C	1,000 (454)	X	
Cobaltous sulfamate (14017-41-5)	C	1,000 (454)	X	
Copper (7440-50-8)	D	5,000 (2,270)		X
Coumaphos (56-72-4)	A	10 (4.54)	X	
Cresol (1319-77-3)	C	1,000 (454)	X	
Crotonaldehyde (4170-30-3)	B	100 (45.4)	X	
Cupric acetate (142-71-2)	B	100 (45.4)	X	
Cupric acetoarsenite (12002-03-8)	B	100 (45.4)	X	
Cupric chloride (7447-39-4)	A	10 (4.54)	X	
Cupric nitrate (3251-23-8)	B	100 (45.4)	X	
Cupric oxalate (5893-66-3)	B	100 (45.4)	X	
Cupric sulfate (7758-98-7)	A	10 (4.54)	X	
Cupric sulfate ammoniated (10380-29-7)	B	100 (45.4)	X	
Cupric tartrate (815-82-7)	B	100 (45.4)	X	
Cyanogen chloride (506-77-4)	A	10 (4.54)	X	
Cyclohexane (110-82-7)	C	1,000 (454)	X	
2,4-D Acid (94-75-7)	B	100 (45.4)	X	
2,4-D Esters (94-11-1)	B	100 (45.4)	X	
DDD (72-54-8)	X	1 (0.454)	X	X
DDE (72-55-9)	X	1 (0.454)		X
DDT (50-29-3)	X	1 (0.454)	X	X
Diazinon (5333-41-5)	X	1 (0.454)	X	
Dibenz[a,h]anthracene				
Dibenzo[a,h]anthracene (53-70-3)	X	1 (0.454)		X
Dibromomethane (106-93-4)	C	1,000 (454)		X
Dibutyl phthalate (84-74-2)	A	10 (4.54)	X	X
Dicamba (1918-00-9)	C	1,000 (454)	X	
Dichlobenil (1194-65-6)	B	100 (45.4)	X	
Dichlone (117-80-6)	X	1 (0.454)	X	
Dichlorobenzene (all isomers) (25321-22-6)	B	100 (45.4)	X	
1,2-Dichlorobenzene (95-50-1)	B	100 (45.4)	X	X
1,3-Dichlorobenzene (541-73-1)	B	100 (45.4)		X
1,4-Dichlorobenzene (106-46-7)	B	100 (45.4)	X	X
3,3'-Dichlorobenzidine (91-94-1)	X	1 (0.454)		X
Dichlorobromomethane (75-27-4)	D	5,000 (2,270)		X
1,1-Dichloroethane (75-34-3)	C	1,000 (454)		X
1,2-Dichloroethane (107-06-2)	D	5,000 (2,270)	X	X
Dichloroethylene (all isomers) (25323-30-2)	D	5,000 (2,270)		X
1,1-Dichloroethylene (75-35-4)	D	5,000 (2,270)	X	X
1,2-trans-Dichloroethylene (156-60-5)	C	1,000 (454)		X
Dichloromethane (75-09-2)	C	1,000 (454)		X
2,4-Dichlorophenol (120-83-2)	B	100 (45.4)		X

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Dichloropropane (all isomers) (26638-19-7)	C	1,000 (454)	X	
1,2-Dichloropropane (78-87-5)	C	1,000 (454)	X	X
Dichloropropene-Dichloropropane mixture (8003-19-8)	B	100 (45.4)	X	
Dichloropropene(s) (all isomers) (26952-23-8)	B	100 (45.4)	X	
1,3-Dichloropropene (542-75-6)	B	100 (45.4)	X	X
2,2-Dichloropropionic acid (75-99-0)	D	5,000 (2,270)	X	
Dichlorvos (62-73-7)	A	10 (4.54)	X	
Dieldrin (60-57-1)	X	1 (0.454)	X	X
Diethylamine (109-89-7)	B	100 (45.4)	X	
Dimethylamine (124-40-3)	C	1,000 (454)	X	
Diethyl phthalate (84-66-2)	C	1,000 (454)		X
Dimethylnitrosamine (62-75-9)	X	1 (0.454)		X
2,4-Dimethylphenol (105-67-9)	B	100 (45.4)		X
Dimethyl phthalate (131-11-3)	D	5,000 (2,270)		X
Dinitrobenzene (all isomers) (25154-54-5)	B	100 (45.4)	X	
4,6-Dinitro-o-cresol (534-52-1)	A	10 (4.54)		X
Dinitrophenol (25550-58-7)	A	10 (4.54)	X	
2,4-Dinitrophenol (all isomers) (51-28-5)	A	10 (4.54)	X	X
Dinitrotoluene (all isomers) (25321-14-6)	C	1,000 (454)	X	X
2,4-Dinitrotoluene (121-14-2)	C	1,000 (454)	X	X
2,6-Dinitrotoluene (606-20-2)	C	1,000 (454)	X	X
Di-n-octyl phthalate (117-84-0)	D	5,000 (2,270)		X
1,2-Diphenylhydrazine (122-66-7)	X	1 (0.454)		X
Di-n-propylnitrosamine (621-64-7)	X	1 (0.454)		X
Diquat (85-00-7)	C	1,000 (454)	X	
Disulfoton (298-04-4)	X	1 (0.454)	X	
Diuron (330-54-1)	B	100 (45.4)	X	
Dodecybenzenesulfonic acid (27176-87-0)	C	1,000 (454)	X	
Endosulfan (all isomers) (115-29-7)	X	1 (0.454)	X	X
Endosulfan (alpha isomer) (959-98-8)	X	1 (0.454)		X
Endosulfan (beta isomer) (33213-65-9)	X	1 (0.454)		X
Endosulfan sulfate (1031-07-8)	X	1 (0.454)		X
Endrin and metabolites (72-20-8)	X	1 (0.454)	X	X
Endrin aldehyde (7421-93-4)	X	1 (0.454)		X
Epichlorohydrin (106-89-8)	C	1,000 (454)	X	
Ethion (563-12-2)	A	10 (4.54)	X	
Ethylbenzene (100-41-4)	C	1,000 (454)	X	X
Ethylenediamine (107-15-3)	D	5,000 (2,270)	X	
Ethylene dibromide (106-93-4)	C	1,000 (454)	X	
Ethylene dichloride (107-06-2)	D	5,000 (2,270)	X	X
EDTA (60-00-4)	D	5,000 (2,270)	X	
Ferric ammonium citrate (1185-57-5)	C	1,000 (454)	X	

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

APPENDIX C

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Ferric ammonium oxalate (2944-67-4)	C	1,000 (454)	X	
Ferric chloride (7705-08-0)	C	1,000 (454)	X	
Ferric fluoride (7783-50-8)	B	100 (45.4)	X	
Ferric nitrate (10421-48-4)	C	1,000 (454)	X	
Ferric sulfate (10028-22-5)	C	1,000 (454)	X	
Ferrous ammonium sulfate (10045-89-3)	C	1,000 (454)	X	
Ferrous chloride (7758-94-3)	B	100 (45.4)	X	
Ferrous sulfate (7720-78-7)	C	1,000 (454)	X	
Fluoranthene (206-44-0)	B	100 (45.4)		X
Fluorene (86-73-7)	D	5,000 (2,270)		X
Formaldehyde (50-00-0)	C	1,000 (454)	X	
Formic acid (64-18-6)	D	5,000 (2,270)	X	
Furmaric acid (110-17-8)	D	5,000 (2,270)	X	
Furfural (98-01-1)	D	5,000 (2,270)	X	
Guthion (86-50-0)	X	1 (0.454)	X	
Heptachlor (76-44-8)	X	1 (0.454)	X	X
Heptachlor epoxide (1024-57-3)	X	1 (0.454)		X
Hexachlorobenzene (118-74-1)	X	1 (0.454)		X
Hexachlorobutadiene (87-68-3)	X	1 (0.454)		X
Hexachlorocyclohexane (gamma isomer) (58-89-9)	X	1 (0.454)	X	X
Hexachlorocyclopentadiene (77-47-4)	X	1 (0.454)	X	X
Hexachloroethane (67-72-1)	X	1 (0.454)		X
Hydrochloric acid (647-01-0) (Hydrogen Chloride)	B	100 (45.4)	X	
Hydrofluoric acid (7664-39-3)(Liquid) (Hydrogen flouride)	B	100 (45.4)	X	
Hydrocyanic acid (74-90-8) (Hydrogen cyanide)	A	10 (4.54)	X	
Hydrosulfuric acid (7783-06-4) (Hydrogen sulfide)	B	100 (45.4)	X	
Indeno(1,2,3-cd)pyrene (193-39-5)	X	1 (0.454)		X
Isophorone (78-59-1)	D	5,000 (2,270)		X
Isoprene (78-79-5)	C	1,000 (454)	X	
Isopropanolamine dodecylbenzenesulfonate (42504-46-1)	C	1,000 (454)	X	
Kelthane (115-32-2)	A	10 (4.54)	X	
Kepone (143-50-0)	X	1 (0.454)	X	
Lead (7439-92-1)	X	1 (0.454)		X
Lead acetate (301-04-2)	D	5,000 (2,270)	X	
Lead arsenate (77-84-409)	D	5,000 (2,270)	X	
Lead chloride (7758-95-4)	B	100 (45.4)	X	
Lead fluoborate (13814-96-5)	B	100 (45.4)	X	
Lead fluoride (7783-46-2)	B	100 (45.4)	X	

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Lead iodide (10101-63-0)	B	100 (45.4)	X	
Lead nitrate (10099-74-8)	B	100 (45.4)	X	
Lead stearate (7428-48-0)	D	5,000 (2,270)	X	
Lead sulfate (7446-14-2)	B	100 (45.4)	X	
Lead sulfide (1314-87-0)	D	5,000 (2,270)	X	
Lead thiocyanate (592-87-0)	B	100 (45.4)	X	
Lindane (58-89-9)	X	1 (0.454)	X	X
Lithium chromate (14307-35-8)	C	1,000 (454)	X	
Malathion (121-75-5)	B	100 (45.4)	X	
Maleic acid (110-16-7)	D	5,000 (2,270)	X	
Maleic anhydride (108-31-6)	D	5,000 (2,270)	X	
Mercaptodimethur (2032-65-7)	A	10 (4.54)	X	
Mercuric cyanide (592-04-1)	X	1 (0.454)	X	
Mercuric nitrate (10045-94-0)	A	10 (4.54)	X	
Mercuric sulfate (7783-35-9)	A	10 (4.54)	X	
Mercuric thiocyanate (592-85-8)	A	10 (4.54)	X	
Mercurous nitrate (10415-75-5)	A	10 (4.54)	X	
Mercury (7439-97-6)	X	1 (0.454)		X
Methoxychlor (72-43-5)	X	1 (0.454)	X	
Methylmercaptan (74-93-1)	B	100 (45.4)	X	
Methyl methacrylate (80-62-6)	C	1,000 (454)	X	
Methyl parathion (298-00-0)	B	100 (45.4)	X	
Mevinphos (7786-34-7)	A	10 (4.54)	X	
Mexacarbate (315-18-4)	B	100 (45.4)	X	
Monoethylamine (75-04-7)	B	100 (45.4)	X	
Monomethylamine (74-89-5)	B	100 (45.4)	X	
Naled (300-76-5)	A	10 (4.54)	X	
Naphthalene (91-20-3)	B	100 (45.4)	X	X
Naphthenic acid (1338-24-5)	B	100 (45.4)	X	
Nickel (7440-02-0)	X	1 (0.454)		X
Nickel ammonium sulfate (15699-18-0)	D	5,000 (2,270)	X	
Nickel chloride (37211-05-5)	D	5,000 (2,270)	X	
Nickel hydroxide (12054-48-7)	C	1,000 (454)	X	
Nickel nitrate (14216-75-2)	D	5,000 (2,270)	X	
Nickel sulfate (7786-81-4)	D	5,000 (2,270)	X	
Nitric acid (7697-37-2)	C	1,000 (454)	X	
Nitrobenzene (98-95-3)	C	1,000 (454)	X	X
Nitrogen dioxide (10102-44-0)	A	10 (4.54)	X	
Nitrophenol (all isomers) (25154-55-6)	B	100 (45.4)	X	
2-Nitrophenol (88-75-5)	B	100 (45.4)	X	X
4-Nitrophenol (100-02-7)	B	100 (45.4)	X	X
N-Nitrosodiethanolamine (621-64-7)	X	1 (0.454)		X
N-Nitrosodimethylamine (62075-9)	X	1 (0.454)		X

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

APPENDIX C

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
N-Nitrosodiphenylamine (86-30-6)	B	100 (45.4)		X
N-Nitrosodi-n-propylamine (621-64-7)	X	1 (0.454)		X
Nitrotoluene (1321-12-6)	C	1,000 (454)	X	
Paraformaldehyde (30525-89-4)	C	1,000 (454)	X	
Parathion (56-38-2)	X	1 (0.454)	X	
Pentachlorophenol (8786-5)	A	10 (4.54)	X	X
Phenanthrene (85-01-8)	D	5,000 (2,270)		X
Phenol (108-95-2)	B	100 (45.4)	X	X
Phosgene (75-44-5)	A	10 (4.54)	X	
Phosphoric acid (7664-38-2)	D	5,000 (2,270)	X	
Phosphorus (7723-14-0)	X	1 (0.454)	X	
Phosphorus oxychloride (10025-87-3)	B	100 (45.4)	X	
Phosphorus pentasulfide (1314-80-3)	B	100 (45.4)	X	
Phosphorus trichloride (7719-12-2)	C	1,000 (454)	X	
Polychlorinated bephenyls (PCB's) (1336-36-3)	A	10 (4.54)	X	X
Potassium arsenate (7784-41-0)	C	1,000 (454)	X	
Potassium arsenite (10124-50-2)	C	1,000 (454)	X	
Potassium bichromate (7778-50-9)	C	1,000 (454)	X	
Potassium chromate (7789-00-6)	C	1,000 (454)	X	
Potassium cyanide (151-50-8)	A	10 (4.54)	X	
Potassium hydroxide (1310-58-3)	C	1,000 (454)	X	
Potassium permanganate (7722-64-7)	B	100 (45.4)	X	
Propargite (2312-35-8)	A	10 (4.54)	X	
Propionic acid (79-09-4)	D	5,000 (2,270)	X	
Propionic anhydride (123-62-6)	D	5,000 (2,270)	X	
Propylene oxide (75-56-9)	B	100 (45.4)	X	
Pyrene (129-00-0)	C	1,000 (454)		X
Pyrethrins (121-29-9)	X	1 (0.454)	X	
Quinoline (91-22-5)	D	5,000 (2,270)	X	
Resorcinol (108-46-3)	D	5,000 (2,270)	X	
Selenium (7782-49-2)	B	100 (45.4)		X
Selenium oxide (7446-08-4)	A	10 (4.54)	X	X
Silver (7440-22-4)	C	1,000 (454)		X
Silver nitrate (7761-88-8)	X	1 (0.454)	X	
Sodium (7440-23-5)	A	10 (4.54)	X	
Sodium arsenate (7631-89-2)	C	1,000 (454)	X	
Sodium arsenite (7784-46-5)	C	1,000 (454)	X	
Sodium bichromate (10588-01-9)	C	1,000 (454)	X	
Sodium biflouride (1333-83-1)	B	100 (45.4)	X	
Sodium bisulfite (7631-90-5)	D	5,000 (2,270)	X	
Sodium chromate (7775-11-3)	C	1,000 (454)	X	
Sodium cyanide (143-33-9)	A	10 (4.54)	X	
Sodium dodecylbenzene sulfonate (25155-30-0)	C	1,000 (454)	X	

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Sodium fluoride (7681-49-4)	C	1,000 (454)	X	
Sodium hydrosulfide (16721-80-5)	D	5,000 (2,270)	X	
Sodium hydroxide (1310-73-2)	C	1,000 (454)	X	
Sodium hypochlorite (7681-52-9)	B	100 (45.4)	X	
Sodium methylate (124-41-4)	C	1,000 (454)	X	
Sodium nitrite (7632-00-0)	B	100 (45.4)	X	
Sodium phosphate, dibasic (7558-79-4)	D	5,000 (2,270)	X	
Sodium phosphate, tribasic (7601-54-9)	D	5,000 (2,270)	X	
Sodium selenite (10102-18-8)	B	100 (45.4)	X	
Strontium chromate (7789-06-2)	C	1,000 (454)	X	
Strychnine and salts (57-24-9)	A	10 (4.54)	X	
Styrene (100-42-5)	C	1,000 (454)	X	
Sulfuric acid (7664-93-9)	C	1,000 (454)	X	
Sulfur monochloride (12771-08-3)	C	1,000 (454)	X	
2,4,5-T acid (93-76-5)	C	1,000 (454)	X	
2,4,5-T amines (2008-46-0)	D	5,000 (2,270)	X	
2,4,5-T esters (93-79-8)	C	1,000 (454)	X	
2,4,5-T salts (13560-99-1)	C	1,000 (454)	X	
2,4,5-TP acid (93-72-1)	B	100 (45.4)	X	
2,4,5-TP acid eaters (32534-95-5)	B	100 (45.4)	X	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (1746-01-6)	X	1 (0.454)		X
1,1,2,2-Tetrachloroethane (79-34-5)	X	1 (0.454)		X
Tetrachloroethylene (127-18-4)	X	1 (0.454)		X
Tetrachloromethane (56-23-5)	D	5,000 (2,270)	X	X
TDE (72-54-8)	X	1 (0.454)	X	X
Tetraethyl lead (78-00-2)	A	10 (4.54)	X	
Tetraethyl pyrophosphate (107-49-3)	A	10 (4.54)	X	
Thallium (7440-28-0)	C	1,000 (454)		X
Thallium (I) sulfate (7446-18-6)	B	100 (45.4)	X	
Toluene (108-88-3)	C	1,000 (454)	X	X
Toxaphene (8001-35-2)	X	1 (0.454)	X	X
Tribromomethane (75-25-2)	B	100 (45.4)		X
1,2,4-Trichlorobenzene (120-82-1)	B	100 (45.4)		X
Trichlorfon (52-68-6)	B	100 (45.4)	X	
1,1,1-Trichloroethane (71-55-6)	C	1,000 (454)		X
1,1,2-Trichloroethane (79-00-5)	X	1 (0.454)		X
Trichloroethylene (79-01-6)	C	1,000 (454)	X	X
Trichlorophenol (isomers) (25167-82-2)	A	10 (4.54)	X	
2,4,5-Trichlorophenol (95-95-4)	A	10 (4.54)	X	
2,4,6-Trichlorophenol (88-06-2)	A	10 (4.54)	X	X
Triethanolamine dodecylbenzenesulfonate (27323-41-7)	C	1,000 (454)	X	
Triethylamine (121-44-8)	D	5,000 (2,270)	X	

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

APPENDIX C

RQ SUBSTANCE (CAS REGISTRY NO.)	CATEGORY*	RQ POUNDS (KILOGRAMS)	CWA 311(b)(2)	CWA 307a
Trimethylamine (75-50-3)	B	100 (45.4)	X	
Uranyl acetate (541-09-3)	B	100 (45.4)	X	
Uranyl nitrate (10102-06-4)	B	100 (45.4)	X	
Vanadium pentoxide (1314-62-1)	B	100 (45.4)	X	
Vanadyl sulfate (27774-13-6)	C	1,000 (454)	X	
Vinyl acetate (108-05-4)	C	1,000 (454)	X	
Vinyl chloride (75-01-4)	X	1 (0.454)		X
Vinylidene chloride (75-35-4)	D	5,000 (2,270)	X	X
Xylene (1330-20-7)	C	1,000 (454)	X	
Xylenol (1300-71-6)	C	1,000 (454)	X	
Zinc (7440-66-6)	C	1,000 (454)		X
Zinc acetate (557-34-6)	C	1,000 (454)	X	
Zinc ammonium chloride (52628-25-8)	C	1,000 (454)	X	
Zinc borate (1332-07-6)	C	1,000 (454)	X	
Zinc bromide (7699-45-8)	C	1,000 (454)	X	
Zinc carbonate (3486-35-9)	C	1,000 (454)	X	
Zinc chloride (7646-85-7)	C	1,000 (454)	X	
Zinc cyanide (557-21-1)	A	10 (4.54)	X	
Zinc fluoride (7783-49-5)	C	1,000 (454)	X	
Zinc formate (557-41-5)	C	1,000 (454)	X	
Zinc hydrosulfite (7779-86-4)	C	1,000 (454)	X	
Zinc nitrate (7779-88-6)	C	1,000 (454)	X	
Zinc phenolaulfonate (127-82-2)	D	5,000 (2,270)	X	
Zinc phosphide (1314-84-7)	B	100 (45.4)	X	
Zinc silicofluoride (16871-71-9)	D	5,000 (2,270)	X	
Zinc sulfate (7733-02-0)	C	1,000 (454)	X	
Zirconium nitrate (137465-89-9)	D	5,000 (2,270)	X	
Zirconium potassium fluoride (16923-95-8)	C	1,000 (454)	X	
Zirconium sulfate (14644-61-2)	D	5,000 (2,270)	X	
Zirconium tetrachloride (10026-11-6)	D	5,000 (2,270)	X	

*The codes "X", "A", "B", "C", and "D" used in the category column are associated with reportable quantities of 1, 10, 100, 1000, and 5000 pounds respectively.

Appendix D
Analysis Of
Prim. Containments

APPENDIX D

ANALYSIS OF PRIMARY CONTAINMENTS

Appendix D

NOTATION: ++ Locate tanks according to Locator File Numbers shown on Figure 2-3
** Tank is no longer in service and is scheduled to be removed
(1) Best engineering judgment since no drawings for this tank were found in the FMPC Drafting Department

Level Control - type of existing control to prevent overfill of tank:
- A = Adequate tank capacity to assure that a tank will not overfill (Administrative Control (SOP) requires empty volume to be greater than tanker volume or largest upstream batch tank)
- B = Overflow equalizing lines between tanks so that a full tank can overflow to an adjacent tank
- C = High level sensors to generate and transmit an alarm signal to a production control system
- D = Pressure tanks are equipped with a high pressure sensing device to activate a alarm
- E = Varec level indicator with float
- F = Overflow lines go to a sump
- G = Gage Board level indicator
- H = Level Indicator
- X = No level control provided

Tank Material
- CS = Carbon steel
- FG = Fiberglass
- SS = Stainless steel

Evaluation Of Tank Construction
- P = Tank material and construction has fair to poor compatibility with the material stored
- Q = Tank material and construction has good to excellent compatibility with the material stored
- X = Tank material and construction are not compatible with the material stored

Inventory Control - do the operators inventory the contents of the tank at least once a month:

Heating Coil - does the tank have an internal heating coil:

General Abbreviations
- Y = Yes
- N = No
- Ft^2 = Square Feet
- NA = Not Applicable
- RQ = Reportable Quantity (per Appendix C)
- G-1 = Is the corresponding Grid Plate Number in Appendix F associated with this Locator File Number

Appendix D-1 Storage Tanks (CWA Hazardous Substance Tanks)

Building Number	Locator++ File Number	Identification Number	Service	Tank Capacity (Gallons)	RQ	Level Control	Evaluation Of Tank Construction	Tank Material	Inventory Control	Tank Visual Inspection	Heating Coil	Age Of Tank
Plant 2/3 Refinery	1 (G-5)	Tank F3E-222	Uranyl Nitrate	25,000	Y	C	Q	SS 304L	Y	Y	N	1955
		Tank F3E-223	Uranyl Nitrate	25,000	Y	C	Q	SS 304L	Y	Y	N	1955
		Tank F3E-224	Uranyl Nitrate	25,000	Y	C	Q	SS 304L	Y	Y	N	1955
		Tank F3E-225	Uranyl Nitrate	60,000	Y	C	Q	SS 304L	Y	Y	N	1955
	2 (G-5)	Tank D1-118	Sulfuric Acid	1,100	Y	H	Q	CS Halar	Y	Y	N	1952
	3 (G-3)	Tank F1-8	HNO_3/H_3PO_4 Acid	5,120	Y	C	Q	SS 304L	Y	Y	N	1954
		Tank F1-23	Nitric Acid	30,500	Y	C/B	Q	SS 304L	Y	Y	N	1951
		Tank F1-24	Nitric Acid	30,500	Y	C/B	Q	SS 304L	Y	Y	N	1951
	4 (G-6)	Tank F1-25A	Uranyl Nitrate	14,203	Y	H/F	Q	SS 304L	Y	Y	N	1955
		Tank F1-26A	Uranyl Nitrate	14,203	Y	H/F	Q	SS 304L	Y	Y	N	1955
		Tank F2E-6NE	Uranyl Nitrate	25,265	Y	D	Q	SS 304L	Y	Y	N	1955
		Tank F2E-5SE	Uranyl Nitrate	25,265	Y	D	Q	SS 304L	Y	Y	N	1955
		Tank F2E-7NW	Uranyl Nitrate	25,265	Y	D	Q	SS 304L	Y	Y	N	1955
		Tank F2E-8SW	Uranyl Nitrate	25,265	Y	D	Q	SS 304L	Y	Y	N	1955
	7 (G-2)	Tank F2-605	Uranyl Nitrate	25,500	Y	E	Q	SS 304L	Y	Y	N	1967
		Tank F2-606	Uranyl Nitrate	25,500	Y	E	Q	SS 304L	Y	Y	N	1967
		Tank F2-607	Uranyl Nitrate	25,500	Y	E	Q	SS 304L	Y	Y	N	1967
		Tank F2-608	Uranyl Nitrate	25,500	Y	E	Q	SS 304L	Y	Y	N	1967
	17 (G-6)	Tank F2E-501	Tributylphosphate	4,000	Y	F/C	Q	SS 304L	Y	Y	N	1955
	26 (G-5)	Tank F3-22	Nitric Acid	7,775	Y	F/H	Q	SS 347	Y	Y	N	1951
		Tank F3-23	Nitric Acid	7,775	Y	F/H	Q	SS 347	Y	Y	N	1951
		Tank F3-24	Nitric Acid	7,775	Y	F/H	Q	SS 347	Y	Y	N	1951
		Tank F3-25	Nitric Acid	7,775	Y	F/H	Q	SS 347	Y	Y	N	1951
		Tank F3-12	Nitric Acid	4,165	Y	X	Q	SS 347	Y	Y	N	1952
		Tank F3-19	Nitric Acid	4,165	Y	X	Q	SS 347	Y	Y	N	1952
		Tank F3-11	Nitric Acid	3,600	Y	H	Q	SS 304L	Y	Y	N	1953
		Tank F3-2	Nitric Acid	4,165	Y	X	Q	SS 347	Y	Y	N	1952
		Tank F3E-27	Dilute Ammonia	4,165	Y	X	Q	SS 347	Y	Y	N	1952
	27 (G-3)	Tank F3E-408	Uranyl Nitrate	25,000	Y	H	Q	SS 304L	Y	Y	N	1955
		Tank F3E-409	Uranyl Nitrate	25,000	Y	H	Q	SS 304L	Y	Y	N	1955
		Tank F1-407	Uranyl Nitrate	3,487	Y	H	Q	SS 304L	Y	Y	N	1952
		Tank F1-400	Raffinate (Nitric Acid)	6,060	Y	H	Q	SS 347	Y	Y	N	1951
		Tank F1-401	Raffinate	6,060	Y	H	Q	SS 347	Y	Y	N	1951

98

1984

Appendix D-1 Storage Tanks (CWA Hazardous Substance Tanks)

Building Number	Locator++ File Number	Identification Number	Service	Tank Capacity (Gallons)	RQ	Level Control	Evaluation Of Tank Construction	Tank Material	Inventory Control	Tank Visual Inspection	Heating Coil	Age Of Tank
	27 (G-3)		(Nitric Acid)									
		Tank F1-402	Raffinate	6,060	Y	H	Q	SS 347	Y	Y	N	1951
			(Nitric Acid)									
		Tank F1-403	Raffinate	6,060	Y	H	Q	SS 347	Y	Y	N	1951
			(Nitric Acid)									
		Tank F1-405	Uranyl Nitrate	6,000	Y	H	Q	SS 304L	Y	Y	Y	1951
		Tank F3E-404	Uranyl Nitrate	6,000	Y	H	Q	SS 304L	Y	Y	N	1951
		Tank F3E-405	Uranyl Nitrate	6,000	Y	H	Q	SS 304L	Y	Y	N	1951
		Tank F1-310	Uranyl Nitrate	8,200	Y	H/C	Q	SS 304L	Y	Y	N	1951
		Tank F1-311	Uranyl Nitrate	8,200	Y	H/C	Q	SS 304L	Y	Y	N	1951
		Tank F1-312	Uranyl Nitrate	8,200	Y	H/C	Q	SS 304L	Y	Y	N	1951
		Tank F1-317	Uranyl Nitrate	8,200	Y	H/C	Q	SS 304L	Y	Y	N	1951
BDN	28 (G-3)	Tank F-1	Sulfuric Acid	2,300	Y	F	Q	SS 316L	Y	Y	N	1984
		Tank F-2	Phosphoric Acid	2,300	Y	F	P	SS 304L	Y	Y	N	1984
		Tank F-3	Sulfuric Acid	2,300	Y	F	P	SS 304L	Y	Y	N	1984
Plant 5 Metals Production	29 (G-9)	Tank T-6	Nitric Acid	2,600	Y	X	Q	SS 304L	N	N	N	1983
Plant 6 Metals Fabrication	13 (G-14)	South Tank (1)	Nitric Acid	995	Y	X	Q	SS 304L	Y	Y	N	1955
	19 (G-12)	Tank F6-2	Nitric Acid	1,175	Y	H	Q	SS 304L	Y	Y	N	1953
		Tank F6-3	Nitric Acid	1,175	Y	H	Q	SS 304L	Y	Y	N	1953
	43 (G-12)	North Tank	Sodium Hydroxide	3,380	Y	G	Q	CS	Y	Y	N	1967
	45 (G-12)	Portable Tank (1)	Sodium Hydroxide	400	Y	X	Q	CS	Y	Y	N	1960
Plant 8 Recovery Plant	8 (G-5)	735-43-7020	Sodium Hydroxide	17,000	Y	X	Q	CS	Y	Y	Y	1957
		735-43-7021	Sodium Hydroxide	17,000	Y	X	Q	CS	Y	Y	Y	1957
		735-43-7004	Sodium Oxalate	12,250	Y	X	Q	CS	Y	Y	Y	1957
Plant 9 Special Products	20A (G-11)	East Tank (1)	Spent Nitric	1,800	Y	H	Q	SS 304L	Y	Y	N	1952
		West Tank (1)	Spent Nitric	5,000	Y	G	Q	SS	Y	Y	N	1961
	21 (G-11)	West Portable (1)	Hydrofluoric Acid	1,000	Y	X	Q	CS Liner	Y	Y	N	1957

1984

99

Appendix D-1 Storage Tanks (CWA Hazardous Substance Tanks)

Building Number	Locator++ File Number	Identification Number	Service	Tank Capacity (Gallons)	RQ	Level Control	Evaluation Of Tank Construction	Tank Material	Inventory Control	Tank Visual Inspection	Heating Coil	Age Of Tank
	21 (G-11)	Tank	and Lime Slurry									
		East Portable (1)	Hydrofluoric Acid	1,000	Y	X	Q	CS Liner	Y	Y	N	1957
		Tank	and Lime Slurry									
	23 (G-11)	Tank 2429	Nitric Acid	2,300	Y	G	Q	SS 304L	Y	Y	N	1961
	24 (G-11)	PPT Tank	Ammonia	1,100	Y	X	Q	CS	Y	Y	N	1967
	44 (G-11)	Tank 1 (1)	HNO_3 and UNH	575	Y	N	P	CS Liner	Y	Y	N	1957
		Tank 2 (1)	HNO_3 and UNH	575	Y	N	P	CS Liner	Y	Y	N	1957
Tank Farm	35 (G-8)	Tank T-19X-1800	Anhydrous HF	35,227	Y	D	Q	CS	Y	Y	N	1989
		Tank T-19X-1900	Anhydrous HF	35,227	Y	D	Q	CS	Y	Y	N	1989
		Tank T-19X-2000	Anhydrous HF	35,227	Y	D	Q	CS	Y	Y	N	1989
		Tank T-19X-2100	Anhydrous HF	35,227	Y	D	Q	CS	Y	Y	N	1989
		Tank T-19X-1500	Dilute HF	30,000	Y	C	Q	CS	Y	Y	N	1989
		Tank T-19X-1600	Dilute HF	30,000	Y	C	Q	CS	Y	Y	N	1989
Refinery Sump	36 (G-5)	Tank F2E-601	HNO_3 (Filter Wash Tank)	26,550	Y	H/B	Q	SS 304L	Y	Y	N	1955
		Tank F1-608	HNO_3 (Filter Wash Tank)	26,550	Y	H/B	Q	SS 304L	Y	Y	N	1953
		Tank F1-609	HNO_3 (Filter Wash Tank)	6,050	Y	C/B	Q	SS 304L	Y	Y	N	1953
		Tank F1-610	HNO_3 (Filter Wash Tank)	6,050	Y	C/B	Q	SS 304L	Y	Y	N	1953
		Tank F1-612	Nitric Acid	1,800	Y	X	Q	SS 304L	Y	Y	N	1953
		Tank F1-613	Nitric Acid	600	Y	H	Q	SS 304L	Y	Y	N	1953
General Sump	33B (G-5)	T-18X-2500 (1)	Raffinate (Nitric Acid)	50,000	Y	F/C	Q	SS 304L	Y	Y	N	1989
	33D (G-5)	Tank F2E-603	Uranyl Nitrate	16,800	Y	F/C	Q	SS 304L	Y	Y	N	1955
Water Plant	12 (G-7)	T-20X-1000 (1)	Sulfuric Acid	1,275	Y	X	Q	SS 304L	Y	Y	N	1955
	51 (G-7)	Tank (1)	Sulfuric Acid	376	Y	X	Q	FG	Y	Y	N	1982

100

1984

Appendix D-1 Storage Tanks (CWA Hazardous Substance Tanks)

Building Number	Locator++ File Number	Identification Number	Service	Tank Capacity (Gallons)	RQ	Level Control	Evaluation Of Tank Construction	Tank Material	Inventory Control	Tank Visual Inspection	Heating Coil	Age Of Tank
Pilot Plant	9 (G-4)	F-54502	Anhydrous HF	8,300	Y	X	Q	CS	Y	Y	N	1982
	10A (G-4)	Tank F-100 (1)	Contaminated Solvent	8,225	Y	H	Q	SS 304L	Y	Y	N	1951
		Tank F-101 (1)	Contaminated Solvent	8,225	Y	H	Q	SS 304L	Y	Y	N	1951
	10B (G-4)	Tank 1	Contaminated Solvent	2,200	Y	H	Q	SS 347	Y	Y	N	1954
		Tank 2	Contaminated Solvent	2,200	Y	H	Q	SS 347	Y	Y	N	1954
	11 (G-4)	Tank T5 (1)	Contaminated Solvent	10,000	Y	X	Q	SS 304L	Y	Y	N	1954
		Tank T6 (1)	Contaminated Solvent	8,110	Y	X	Q	SS 304L	Y	Y	N	1954
		Tank T4 (1)	Thorium Nitrate	8,523	Y	G	Q	SS 304L	Y	Y	N	1954
		Tank T3 (1)	Contaminated Solvent	7,757	Y	X	Q	SS 304L	Y	Y	N	1954
		Tank T2 (1)	Thorium Nitrate (Nitric Acid)	7,707	Y	X	Q	SS 304L	Y	Y	N	1954
	39A (G-4)	Tank W10	Nitric Acid	2,000	Y	X	Q	SS 304	Y	Y	Y	1957
	39B (G-4)	Tank F1-5	Nitric Acid	5,000	Y	G	Q	SS 304L	Y	Y	N	1953
	39C (G-4)	Tank T9	Sodium Hydroxide	8,225	Y	H	Q	SS 304L	Y	Y	N	1953
	39D (G-4)	Tank T1 (1)	Nitric Acid	5,000	Y	G	Q	SS 304L	Y	Y	N	1953
		Tank T7 (1)	Nitric Acid	6,000	Y	X	Q	SS 304L	Y	Y	N	1953
		Tank T8 (1)	Nitric Acid	6,000	Y	X	Q	SS 304L	Y	Y	N	1953
	48 (G-4)	Tank 3 (1)	Hydrofluoric Acid	1,000	Y	X	P	CS	Y	Y	N	1953
		Tank 4 (1)	Hydrofluoric Acid	1,000	Y	X	P	CS	Y	Y	N	1953
	50 (G-4)	T-19X-3100	Anhydrous HF	20,019	Y	D	Q	CS	Y	Y	N	1986
		T-19X-3000	Anhydrous HF	20,019	Y	D	Q	CS	Y	Y	N	1986

101

1984

Appendix D-2 Storage Tanks (40 CFR Part 112 Tanks)

Building Number	Locator++ File Number	Identification Number	Service	Tank Capacity (Gallons)	RQ	Level Control	Evaluation Of Tank Construction	Tank Material	Inventory Control	Tank Visual Inspection	Heating Coil	Age Of Tank
Plant 2/3	5 (G-6)	Tank 5A (1)	Kerosene-TBP Mix	2,615	Y	X	Q	SS 304L	Y	Y	N	1955
		Tank 5B (1)	Kerosene-TBP Mix	2,594	Y	X	Q	SS 304L	Y	Y	N	1955
	6 (G-6)	Tank 17A	Kerosene-TBP Mix	2,500	Y	X	Q	SS 304	Y	Y	N	1951
		Tank 17B	Kerosene-TBP Mix	2,500	Y	X	Q	SS 304	Y	Y	N	1951
		Tank 17C	Kerosene-TBP Mix	1,050	Y	X	Q	SS 304	Y	Y	N	1951
	17 (G-6)	Tank F2E-502	Kerosene	4,000	Y	F/H/C	Q	SS 304L	Y	Y	N	1955
		Tank F1-512	Kerosene-TBP Mix	25,600	Y	C/H	Q	SS 347	Y	Y	N	1953
	27 (G-3)	Tank F3E-406	Oil	6,000	Y	H	Q	SS 304L	Y	Y	N	1951
Plant 6 Metals Fabrication	14 (G-13)	East Tank (1)	Quench Oil (Salt Oil Heat Treating)	1,200	Y	X	Q	SS 304L	Y	Y	N	1955
	15 (G-13)	West Portable (1) Tank	Oil-Water Wash Residue (Salt Oil Heat Treating)	950	Y	X	Q	SS 304L	Y	Y	N	1955
	18 (G-12)	F6E-700	Soluble Oil Coolant	40,000	Y	D	Q	CS	Y	Y	N	1954
Plant 9 Special Products	25 (G-11)	Rapid Bore Facility-NE	Cutting Oil	3,000	Y	X	Q	CS	Y	Y	N	1963
Main Electrical Substation	37A (G-14)	Number 1 Transformer	Transformer (Oil Cooled)	8,360	Y	X	Q	CS	NA	Y	N	1952
		NO. 1 Circuit Breaker	Circuit Breaker (Oil Cooled)	2,400	Y	X	Q	CS	NA	Y	N	1952
	37B (G-14)	Number 2 Transformer	Transformer (Oil Cooled)	8,360	Y	X	Q	CS	NA	Y	N	1952
		NO. 2 Circuit Breaker	Circuit Breaker (Oil Cooled)	2,400	Y	X	Q	CS	NA	Y	N	1952
	37C (G-14)	Number 3 Transformer	Transformer (Oil Cooled)	8,360	Y	X	Q	CS	NA	Y	N	1955

102

1984

Appendix D-2 Storage Tanks (40 CFR Part 112 Tanks)

Building Number	Locator++ File Number	Identification Number	Service	Tank Capacity (Gallons)	RQ	Level Control	Evaluation Of Tank Construction	Tank Material	Inventory Control	Tank Visual Inspection	Heating Coil	Age Of Tank
	37C (G-14)	NO. 3 Circuit Breaker	Circuit Breaker (Oil Cooled)	2,400	Y	X	Q	CS	NA	Y	N	1952
Maintenance Shops	31A (G-10)	Portable Tank	Diesel Fuel	565	Y	X	Q	CS	Y	Y	N	1955
Garage	30A (G-13)	Tank (1)	Gasoline	500	Y	X	Q	CS	Y	Y	N	1976
	30B (G-13)	Tank (1)	Gasoline	500	Y	X	Q	CS	Y	Y	N	1976
	30C (G-13)	Tank (1)	Gasoline	140	Y	X	Q	CS	Y	Y	N	1976
	30D (G-13)	Tank (1)	Diesel Fuel	140	Y	X	Q	CS	Y	Y	N	1976
	30E (G-13)	Tank (1)	Gasoline	500	Y	X	Q	CS	Y	Y	N	1976
	30F (G-13)	Tank (1)	Diesel Fuel	500	Y	X	Q	CS	Y	Y	N	1976
Pilot Plant	53 (G-4)	Tank (1)	NO. 2 Fuel Oil	550	Y	X	Q	CS	Y	Y	N	1976
Adminst. Building	46 N/A	Tank (1)	NO. 2 Fuel Oil	275	Y	X	Q	CS	Y	Y	N	1986
OS&H Building	49 N/A	Tank (1)	NO. 2 Fuel Oil	275	Y	X	Q	CS	Y	Y	N	1989
North Of Plant 1 Pad	52 (G-1)	Tank 1 (1)	Gasoline	550	Y	X	Q	CS	Y	Y	N	1982
		Tank 2 (1)	Gasoline	300	Y	X	Q	CS	Y	Y	N	1982

103

1984

Appendix D-3 Underground Storage Tanks

Building Number	Locator++ File Number	Identification Number	Service	Container Capacity (Gallons)	RQ	Evaluation Of Tank Construction	Tank Material	Inventory Control	Corrosion Protection	Age Of Tank (Years)
Plant 1 Truck Dock	38 (G-6)	Tank 11 (1)	Kerosene	3,000	Y	Q	CS	N	NA**	1954
		Tank 12 (1)	Gasoline	3,000	Y	Q	CS	N	NA**	1954
		Tank 13 (1)	Kerosene	3,000	Y	Q	CS	N	NA**	1954
Plant 6 Metals Fabrication	59 (G-12)	Tank 14 (1)	Soluble Oil	3,000	Y	Q	CS	N	NA**	1964
Maintenance Shops	31B (G-10)	Tank 6 (1)	Gasoline	1,000	Y	Q	CS	N	NA**	1954
Garage	30 (G-13)	Tank 1	Gasoline	1,500	Y	Q	FG	N	NA**	1976
		Tank 2	Gasoline	1,500	Y	Q	FG	N	NA**	1982
		Tank 5 (1)	Waste Oil	200	Y	Q	CS	N	NA**	1954
		Tank 10 (1)	Gasoline	3,000	Y	Q	CS	N	NA**	1954
		Tank 8 (1)	Gasoline	1,000	Y	Q	CS	N	NA**	1954
		Tank 9 (1)	Diesel Fuel	1,000	Y	Q	CS	N	NA**	1954
Railroad Engine House	55 (G-10)	Tank 3	Diesel Fuel	12,250	Y	Q	CS	N	NA**	1952
Heavy Equipment Building	30 (G-13)	Tank 17	Waste Oil	200	Y	Q	CS	N	NA**	1954

104

1984

Appendix D-5 Oil And PCB Container Storage

Building Number	Locator++ File Number	Identification Number	Service	Container Capacity (Gallons)	RQ	Evaluation Of Tank Construction	Tank Material	Tank Visual Inspection	Age Of Container (Years)
Maintenance Shops	41 (G-10)	Drums	Oil Storage Area	55	Y	Q	CS	Y	NA
North Of Plant 1 Pad	54 (G-1)	Drums	Oil	55	Y	Q	CS	N	NA
KC2 Warehouse	34C N/A	Drums	PCB Contaminated Transformer Oil	55	Y	Q	CS	Y	NA
Building 79	56 N/A	Drums	Oil And PCB Contaminated Transformer Oil	55	Y	Q	CS	Y	NA

105

1984

APPENDIX E

ANALYSIS OF SECONDARY CONTAINMENTS

Appendix E

NOTATION: ++ Locate tanks according to Locator File Numbers shown on Figure 2-3
* Analysis of secondary containment area performed by A. M. Kinney on July 29, 1988
** Scheduled to be removed within the next three years

Destination Of Water From Diked Area:

A = Gravity drain to storm sewer is manually closed and sealed at all times except when stormwater is being drained (after analysis if acceptable).
B = Water is pumped automatically by a sump pump to an FMPC Treatment Facility without analysis.
C = Water is pumped by a manually operated sump pump to an FMPC Treatment Facility.
D = Water is pumped to the storm sewer system by a portable pump after analysis if acceptable or to an FMPC Treatment Facility after analysis if not acceptable.
E = Water is pumped by a portable pump to 55 gallon drums to be handled as a hazardous waste.
F = Water flows directly to the storm sewer system due to no secondary containment system.
G = Water flows by a gravity drain to a sump and is handled similar to B above.
X = Gravity drain to storm sewer is not closed and sealed at all times. Intent is to manually close the drain in the event of a spill.

Capped or Blanked-Flanged - is the terminal connection for the loading and unloading station capped or blank-flanged when not in use:

I = Unloading and loading station terminal connection is blank-flanged when not in use
J = Unloading and loading station terminal connection is capped when not in use
X = Neither

Interlocked Warning Light - a warning light is present to prevent vehicular departure before complete disconnect of flexible or fixed transfer hose:

Y = Yes
N = No

Visual Tanker Inspection - is there a visual inspection of tanker and transfer line before vehicular departure:

Y = Yes
N = No

General Abbreviations:

SC = Secondary Containment
Ft^2 = Square Feet
NA = Not Applicable
* = Containment Systems (all containment systems are concrete except for those areas that also have a stainless steel liner or the secondary containment is a steel tank)
(G-1) = Is the corresponding Grid Plate Number in Appendix F associated with this Locator File Number

Appendix E-1 Storage Tanks (CWA Hazardous Substance Tanks)

Building Number	Locator++ File Number	Capacity Of Largest Tank	Surface Of Diked Area	Number Of Containers	Required Containment Capacity	Diked Area Containment Capacity	Sufficient Capacity	Destination Of Water From Diked Area	Containment System
Plant 2/3 Refinery	1 (G-5)	60,000 gal	2,343 Ft^2	4	67,303 gal	76,831 gal	Y	B	Controlled, diked
	2 (G-5)	1,100 gal	90 Ft^2	1	1,381 gal	1,378 gal	Y	D	Controlled, diked
	3* (G-3)	30,500 gal	2,268 Ft^2	3	37,509 gal	32,226 gal	N	B	Controlled, diked
	4* (G-6)	25,265 gal	2,368 Ft^2	6	32,645 gal	31,658 gal	N	B	Controlled, diked
	7 (G-2)	25,500 gal	3,071 Ft^2	4	35,071 gal	35,769 gal	Y	B	Controlled, diked
	17 (G-6)	25,600 gal	796 Ft^2	3	28,080 gal	32,543 gal	Y	B	Controlled, diked
	26* (G-5)	7,775 gal	7,345 Ft^2	9	30,617 gal	41,376 gal	Y	B	Controlled, diked
	27* (G-3)	25,000 gal	5,684 Ft^2	15	42,716 gal	26,068 gal	N	B	Controlled, diked
	28* (G-3)	7,800 gal	605 Ft^2	3	6,086 gal	5,156 gal	N	B	Controlled, diked
Plant 5 Metals Production	29 (G-9)	2,600 gal	110 Ft^2	1	2,943 gal	2,408 gal	N	X	Controlled, diked
Plant 6 Metals Fabrication	13 (G-14)	995 gal	72 Ft^2	1	1,219 gal	991 gal	N	A/D	Controlled, diked
	19 (G-12)	1,175 gal	118 Ft^2	2	1,543 gal	1,217 gal	N	D	Controlled, diked with steel liner
	43 (G-12)	3,380 gal	144 Ft^2	1	3,829 gal	3,199 gal	N	D	Controlled, diked
	45 (G-12)	400 gal	0 Ft^2	1	400 gal	0 gal	N	NA	None
Plant 8 Recovery Plant	8 (G-5)	17,000 gal	3,097 Ft^2	3	26,654 gal	24,750 gal	N	B	Controlled, diked
Plant 9 Special Products	20A (G-11)	5,000 gal	528 Ft^2	2	6,646 gal	7,947 gal	Y	D	Controlled, diked
	21 (G-11)	1,000 gal	145 Ft^2	2	1,451 gal	1,372 gal	N	A/D	Controlled, diked
	23 (G-11)	2,300 gal	130 Ft^2	1	2,706 gal	1,900 gal	N	B	Controlled, diked with steel liner
	24 (G-11)	1,100 gal	100 Ft^2	1	1,412 gal	1,973 gal	Y	A/D	Controlled, diked
	44 (G-11)	575 gal	83 Ft^2	2	832 gal	757 gal	N	A/D	Controlled, diked
Tank Farm	35 (G-8)	35,227 gal	4,750 Ft^2	6	50,804 gal	124,355 gal	Y	B	Controlled, diked with liner system

108

1984

Appendix E-1 Storage Tanks (CWA Hazardous Substance Tanks)

Building Number	Locator++ File Number	Capacity Of Largest Tank	Surface Of Diked Area	Number Of Containers	Required Containment Capacity	Diked Area Containment Capacity	Sufficient Capacity	Destination Of Water From Diked Area	Containment System
Refinery Sump	36 (G-5)	26,550 gal	2,633 Ft^2	6	34,758 gal	6,019 gal	N	B	Controlled, diked
General Sump	33B (G-5)	56,000 gal	5,591 Ft^2	8	73,426 gal	12,307 gal	N	B	Controlled, diked
	33D (G-5)	16,800 gal	1,976 Ft^2	3	22,960 gal	5,444 gal	N	B	Controlled, diked
Water Treatment	12* (G-7)	1,275 gal	88 Ft^2	1	1,549 gal	1,272 gal	N	D	Controlled, diked
	51 (G-7)	376 gal	28 Ft^2	1	464 gal	423 gal	N	D	Steel tank
Pilot Plant	9 (G-4)	8,300 gal	261 Ft^2	1	9,113 gal	5,701 gal	N	A	Controlled, diked
	10A (G-4)	8,800 gal	663 Ft^2	2	10,866 gal	12,378 gal	Y	A	Controlled, diked
	10B (G-4)	2,200 gal	275 Ft^2	2	3,051 gal	3,923 gal	Y	A	Controlled, diked
	11* (G-4)	10,000 gal	1,186 Ft^2	5	13,698 gal	10,233 gal	N	A	Controlled, diked
	39A (G-4)	2,000 gal	324 Ft^2	1	3,009 gal	2,827 gal	N	G	Controlled, diked
	39B (G-4)	7,640 gal	324 Ft^2	1	8,649 gal	2,827 gal	N	G	Controlled, diked
	39C (G-4)	6,000 gal	669 Ft^2	2	8,085 gal	13,758 gal	Y	G	Controlled, diked
	39D (G-4)	6,000 gal	669 Ft^2	2	8,085 gal	13,758 gal	Y	G	Controlled, diked
	48 (G-4)	1,000 gal	170 Ft^2	2	1,530 gal	583 gal	N	B	Controlled, diked
	50 (G-4)	20,019 gal	2,003 Ft^2	2	26,263 gal	51,635 gal	Y	B	Controlled, diked

1984

109

Appendix E-2 Storage Tanks (40 CFR Part 112 Tanks)

Building Number	Locator++ File Number	Capacity Of Largest Tank	Surface Of Diked Area	Number Of Containers	Required Containment Capacity	Diked Area Containment Capacity	Sufficient Capacity	Destination Of Water From Diked Area	Containment System
Plant 2/3 Refinery	5 (G-6)	2,615 gal	837 Ft^2	2	5,225 gal	7,517 gal	Y	B	Controlled, diked
	6 (G-6)	2,500 gal	561 Ft^2	3	4,249 gal	4,313 gal	Y	B	Controlled, diked
	17 (G-6)	25,600 gal	796 Ft^2	3	28,080 gal	32,543 gal	Y	B	Controlled, diked
	27* (G-3)	25,000 gal	5,684 Ft^2	15	42,716 gal	26,068 gal	N	B	Controlled, diked
Plant 6 Metals Fabrication	14 (G-13)	1,200 gal	274 Ft^2	1	2,055 gal	1,523 gal	N	A/D	Controlled, diked
	15 (G-13)	950 gal	220 Ft^2	1	1,636 gal	1,149 gal	N	A/D	Controlled, diked
	18 (G-12)	40,000 gal	1,493 Ft^2	1	44,654 gal	44,926,gal	Y	A/D	Controlled, diked
Plant 9 Special Products	25 (G-11)	3,000 gal	225 Ft^2	1	3,901 gal	4,029 gal	Y	A/D	Controlled, diked
Main Electrical Substation	37A (G-14)	8,360 gal	613 Ft^2	1	10,270 gal	11,458 gal	Y	X	Uncontrolled, diked
	37B (G-14)	8,360 gal	613 Ft^2	1	10,270 gal	11,458 gal	Y	X	Uncontrolled, diked
	37C (G-14)	8,360 gal	613 Ft^2	1	10,270 gal	11,458 gal	Y	X	Uncontrolled, diked
Maintenance Shops	31A (G-10)	565 gal	45 Ft^2	1	706 gal	452 gal	N	F	Controlled, diked
Garage	30A (G-13)	500 gal	44 Ft^2	1	638 gal	543 gal	N	X	Steel tank
	30B (G-13)	500 gal	44 Ft^2	1	638 gal	543 gal	N	X	Steel tank
	30C (G-13)	140 gal	27 Ft^2	1	226 gal	271 gal	Y	D	Steel tank
	30D (G-13)	140 gal	27 Ft^2	1	226 gal	271 gal	Y	D	Steel tank
	30E (G-13)	500 gal	59 Ft^2	1	684 gal	516 gal	N	D	Controlled, diked
	30F (G-13)	500 gal	44 Ft^2	1	638 gal	543 gal	N	X	Steel tank
Pilot Plant	53 (G-4)	550 gal	38 Ft^2	1	668 gal	547 gal	N	D	Steel tank
Administration Building	46 (N/A)	275 gal	59 Ft^2	1	460 gal	195 gal	N	D	Controlled, diked

1984

110

Appendix E-2 Storage Tanks (40 CFR Part 112 Tanks)

Building Number	Locator++ File Number	Capacity Of Largest Tank	Surface Of Diked Area	Number Of Containers	Required Containment Capacity	Diked Area Containment Capacity	Sufficient Capacity	Destination Of Water From Diked Area	Containment System
HS&P Building	49 (N/A)	275 gal	44 Ft^2	1	460 gal	312 gal	N	D	Controlled, diked
North Of Plant 1 Pad	52 (G-1)	550 gal	168 Ft^2	2	1,074 gal	1,244 gal	Y	D	Controlled, diked

1984

111

Appendix E-3 Underground Storage Tanks

Building Number	Locator++ File Number	Capacity Of Container	Number Of Containers	Secondary Containment
Plant 1 Truck Dock	38 (G-6)	3,000 gal **	1	None
		3,000 gal **	1	None
		3,000 gal **	1	None
Plant 6 Metals Fabrication	59 (G-14)	3,000 gal **	1	None
Maintenance Shops	31B (G-10)	1,000 gal **	1	None
Garage	30 (G-13)	1,500 gal **	1	None
		1,500 gal **	1	None
		200 gal **	1	None
		3,000 gal **	1	None
		1,000 gal **	1	None
		1,000 gal **	1	None
Railroad Engine House	55 (G-10)	12,250 gal **	1	None
Heavy Equipment Building	30 (G-13)	200 gal **	1	None

112

1984

Appendix E-4 Loading And Unloading Facilities

Building Number	Locator++ File Number	Capacity Of Largest Tanker	Surface Area Of SC Areas	Capped Or Blank-Flanged	Required Containment Capacity	Diked Area Containment Capacity	Sufficient Capacity	Destination Of Water From SC Area	Containment System	Interlocked Warning Light	Visual Tanker Inspec.
North Of Plant 1 Pad	100 (G-1)	550 gal	None	X	? gal	0 gal	N	F	None	N	Y
Plant 2/3 Refinery	101 (G-6)	4,000 gal	258 Ft^2	X	4,804 gal	966 gal	N	B	Controlled, diked pad	N	Y
	109 (G-5)	3,000 gal	None	X	? gal	0 gal	N	F	None	N	Y
Plant 8 Recovery Plant	103 (G-5)	19,000 gal	None	X	? gal	0 gal	N	F	None	N	Y
Tank Farm	104 (G-8)	19,000 gal	2,000 Ft^2	I	25,233 gal	51,635 gal	Y	B	Controlled, diked	N	Y
Water Plant	105 (G-7)	3,000 gal	None	X	? gal	0 gal	N	F	None	N	Y
Garage	106 (G-13)	9,000 gal	None	X	? gal	0 gal	N	F	None	N	Y
Pilot Plant	107 (G-4)	5,000 gal	2,000 Ft^2	I	11,233 gal	54,900 gal	Y	B	Controlled, diked pad	N	Y
Receiving And Incoming Materials Warehouse	108 (G-15)	15,840 gal	1,720 Ft^2	NA	21,201 gal	51,462 gal	Y	X	Controlled, diked pad	NA	Y
Plant 6 Metals Fabrication	110 (G-12)	4,000 gal	315 Ft^2	X	6,509 gal	8,906 gal	Y	B	Controlled, diked pad	N	Y
BDN Facility	102 (G-3)	3,000 gal	None	X	? gal	0 gal	N	F	None	N	Y

1984

113

Appendix E-5 OIL And PCB Container Storage

Building Number	Locator++ File Number	Capacity Of Largest Container	Number Of Containers	Capacity Of 10% Of All Containers	Required Containment Capacity	Diked Area Containment Capacity	Sufficient Capacity	Destination Of Water From Diked Area	Containment System
Maintenance Shops	41 (G-10)	55 gal	168	924 gal	? gal	0 gal	N	F	Controlled, diked
North Of Plant 1 Pad	54 (G-1)	55 gal	37	204 gal	671 gal	1,099 gal	Y	D	Controlled, diked
KC2 Warehouse	34C N/A	55 gal	240	1,320 gal	1,320 gal	5,236 gal	Y	D	Controlled, diked
Building 79	56 N/A	55 gal	3648	20,064 gal	20,064 gal	48,581 gal	Y	D	Controlled, diked

114

1984

APPENDIX F

GRID PLATES

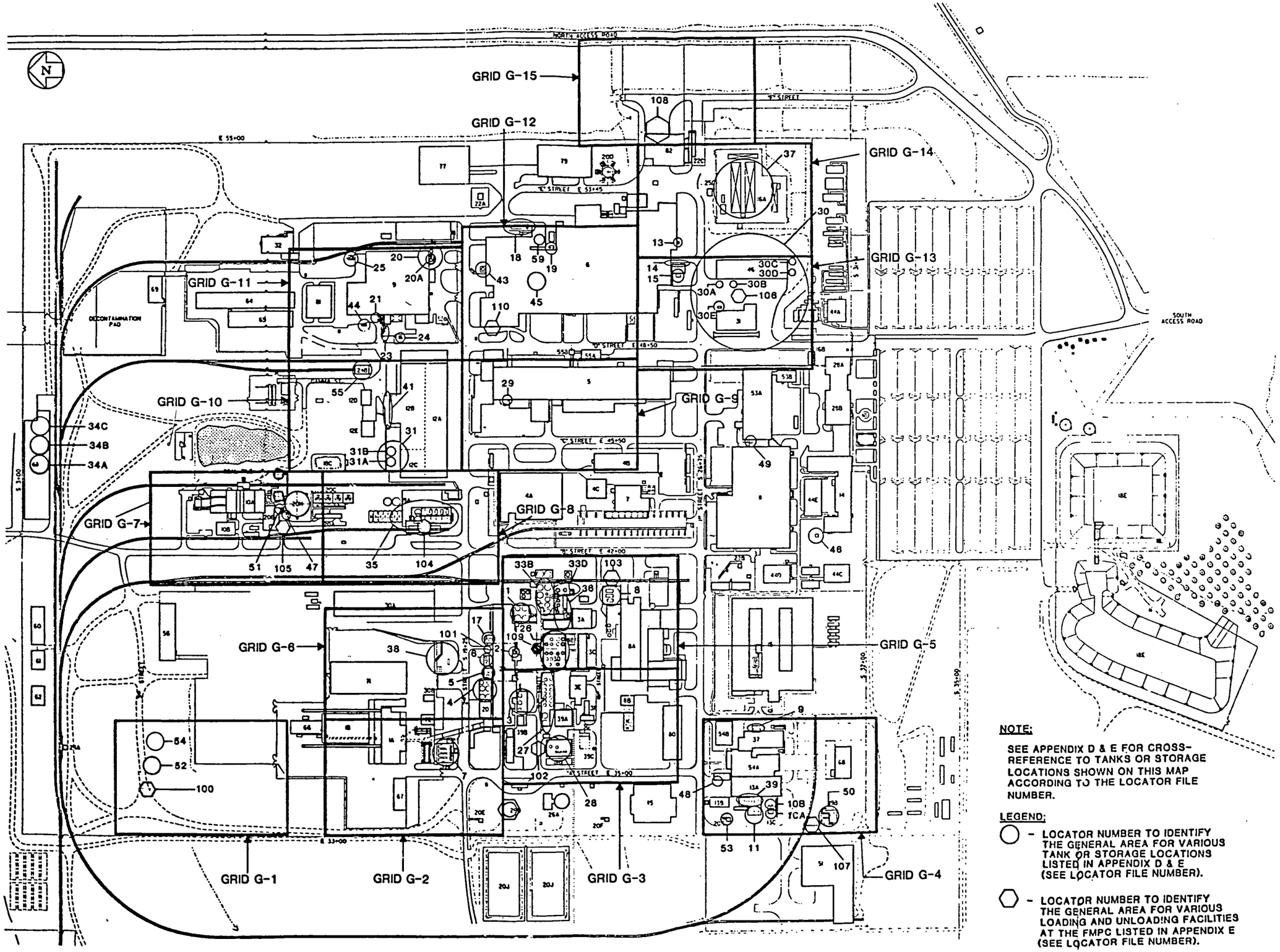
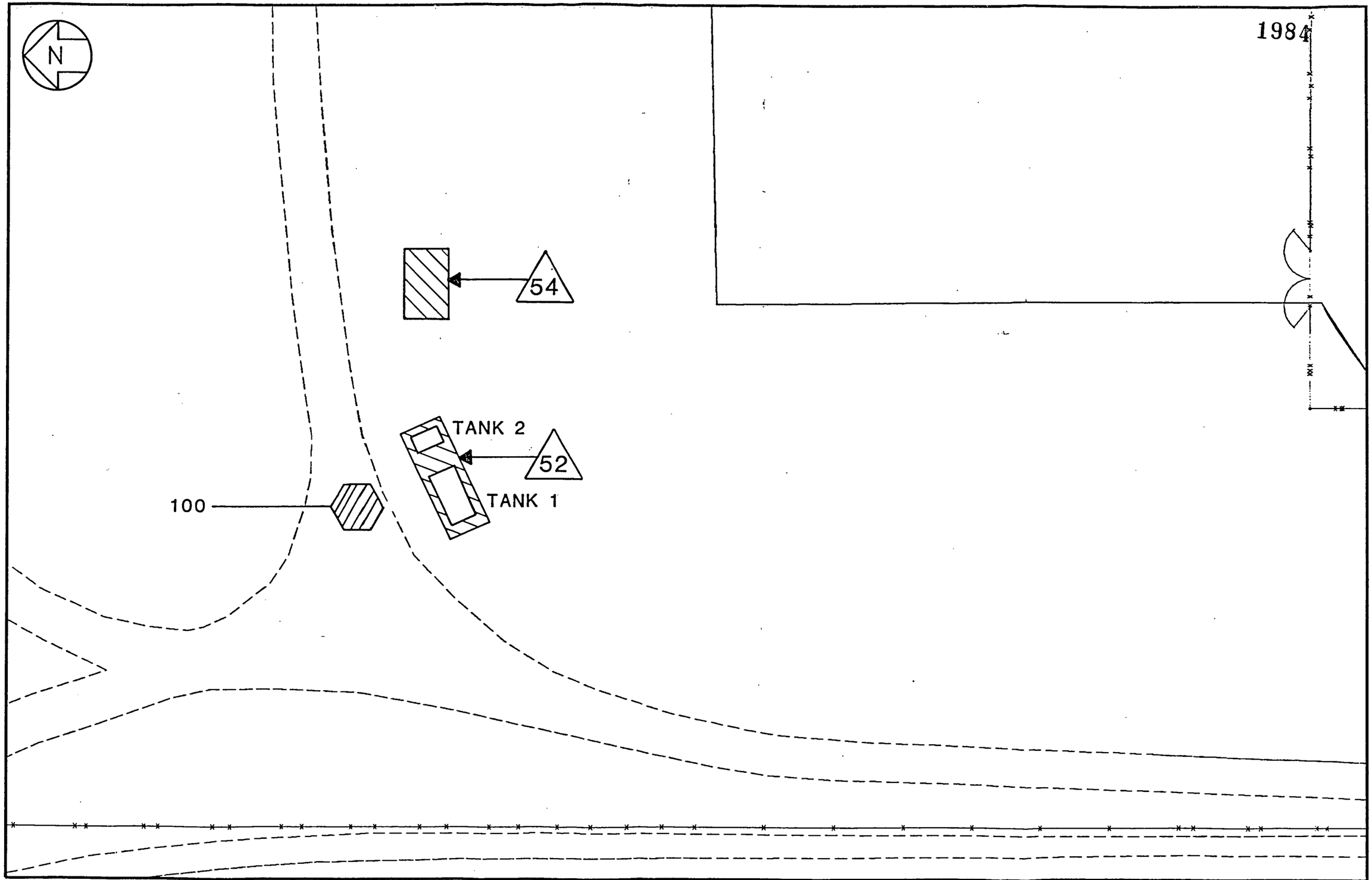


FIGURE 2-3: FMPC STORAGE TANK LOCATIONS AND SPCC MASTER GRID



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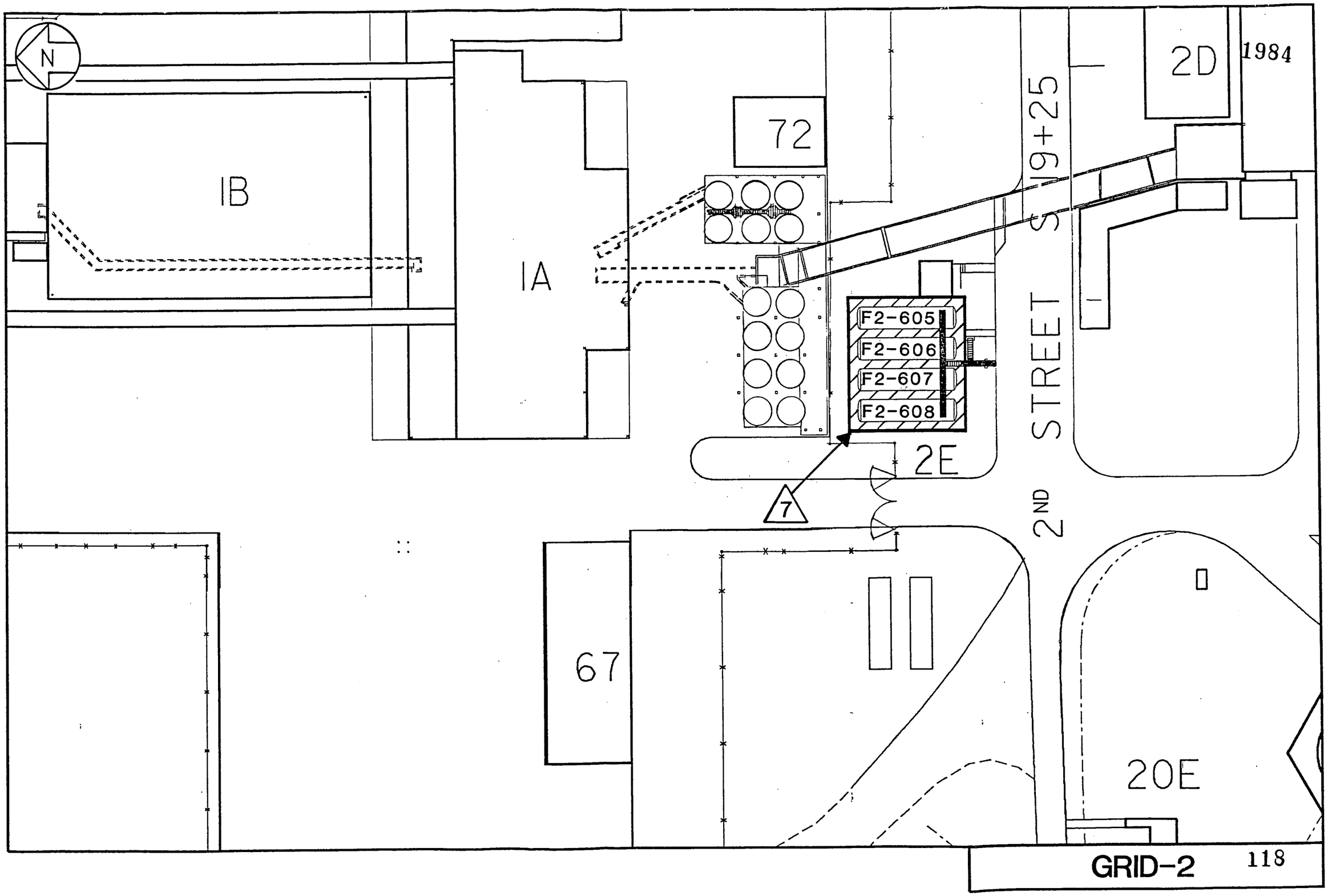
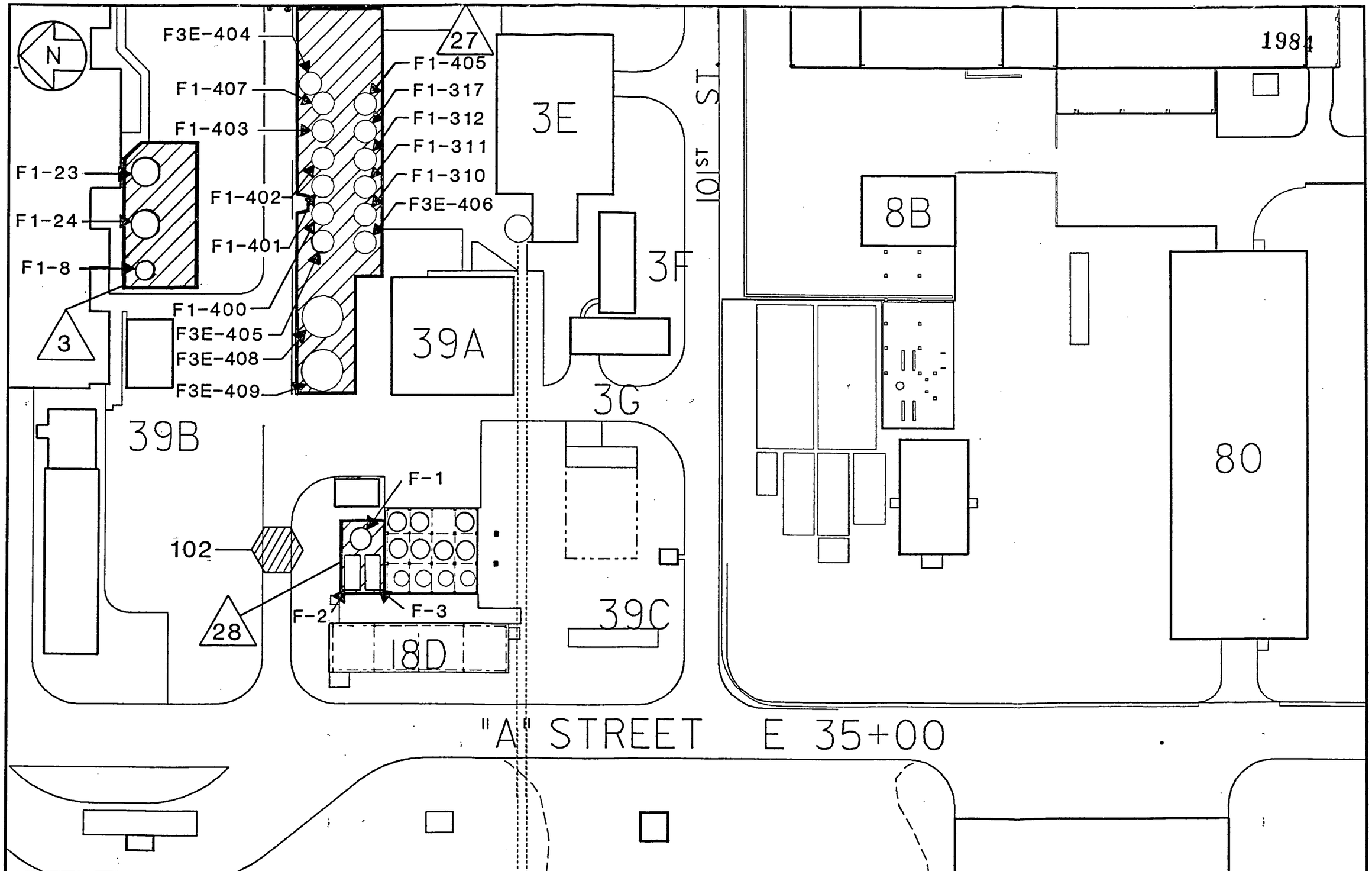
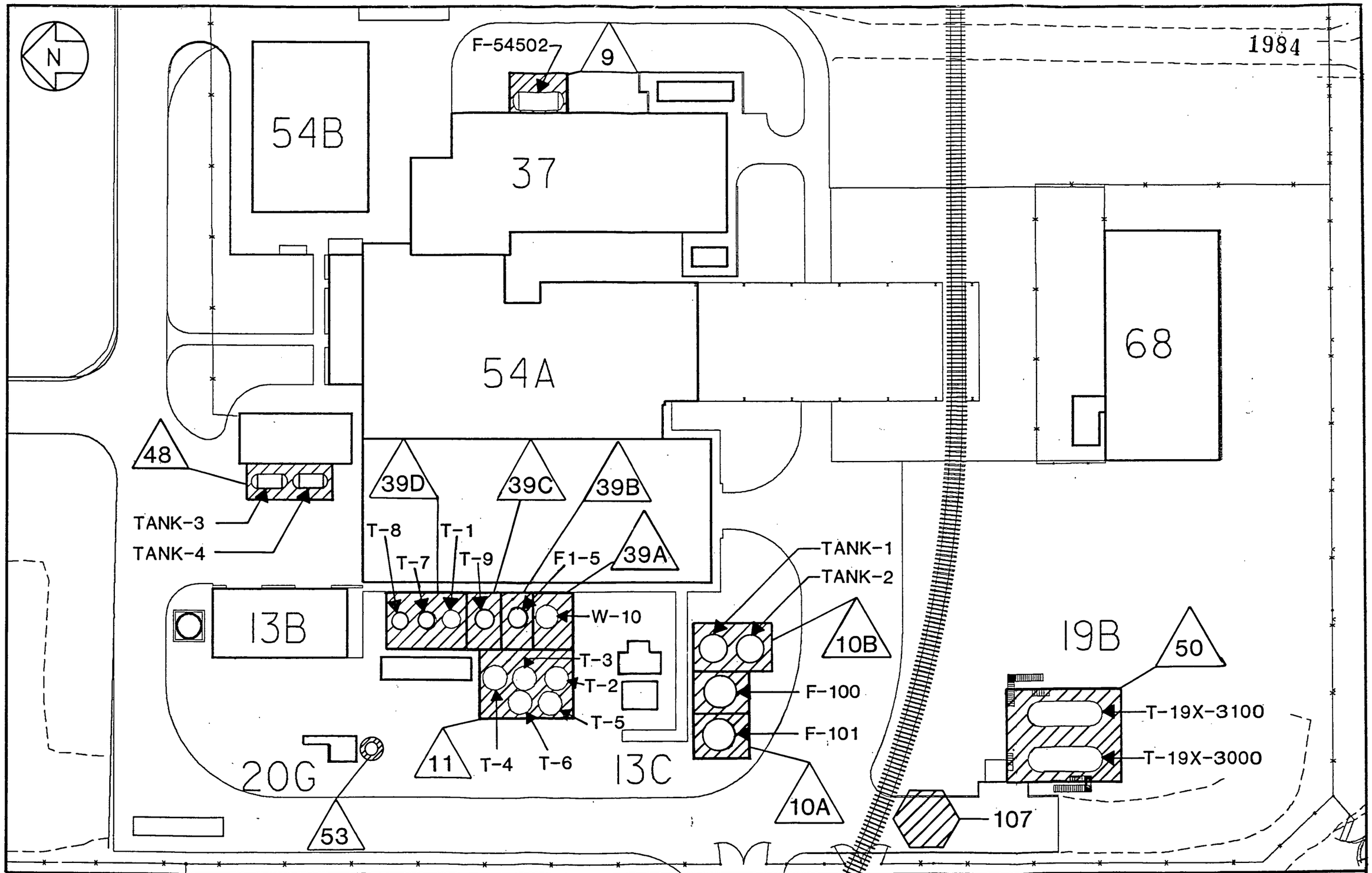
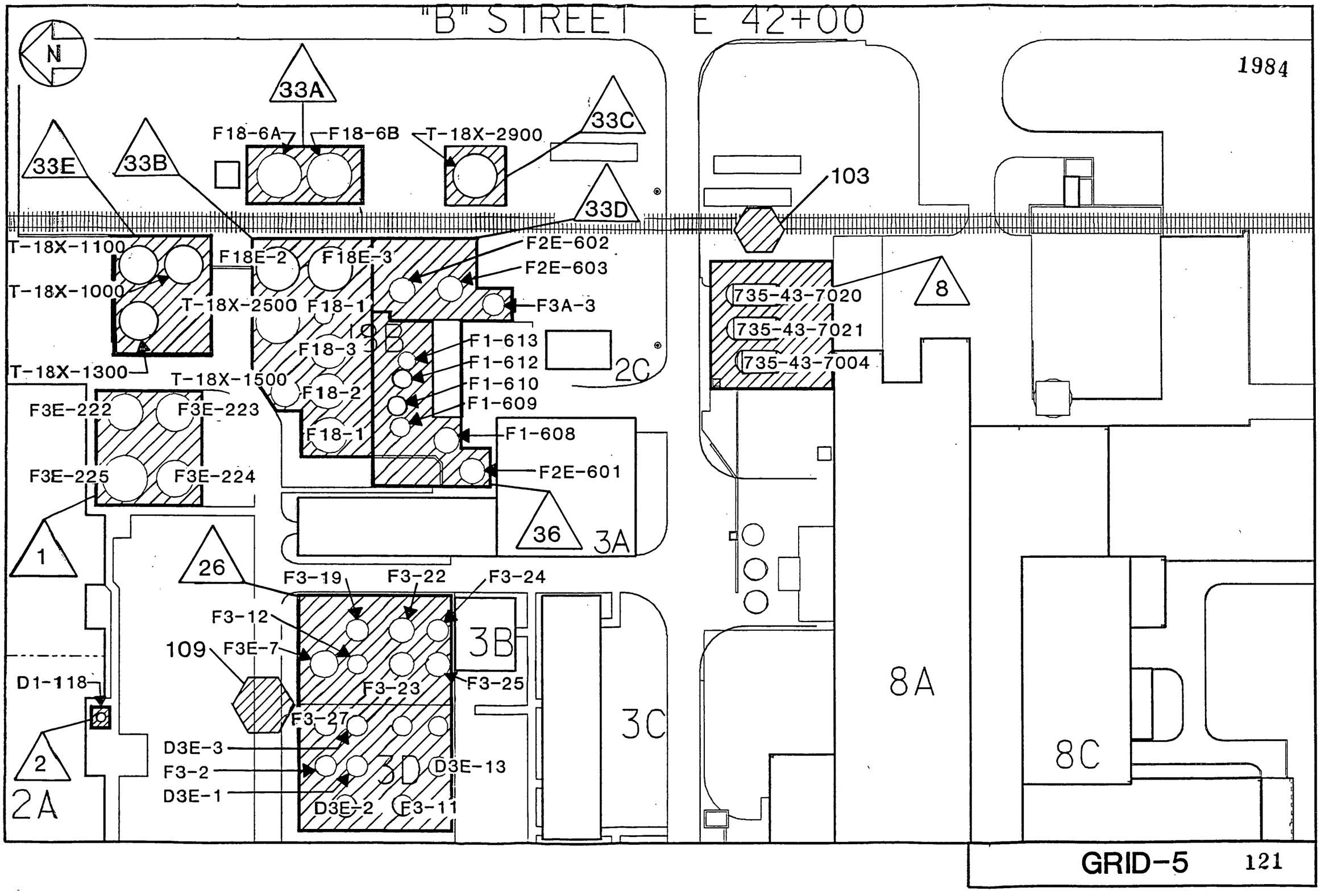

N
IB
IA
72
67
2D
1984
S 19+25
STREET
2ND
2E
20E
F2-605
F2-606
F2-607
F2-608
7
GRID-2

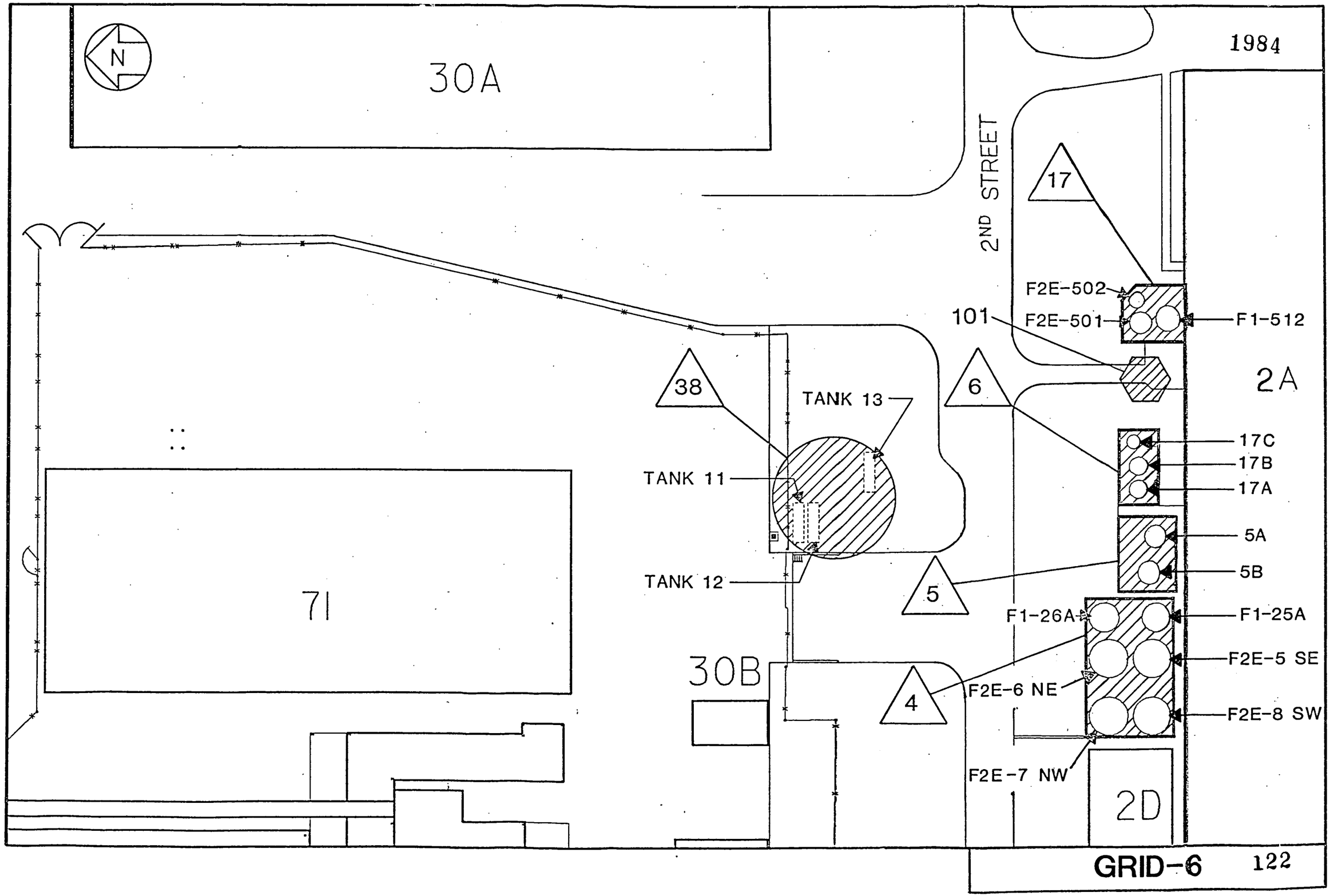

N
F3E-404
F1-407
F1-403
F1-23
F1-24
F1-8
F1-402
F1-401
F1-400
F3E-405
F3E-408
F3E-409
27
F1-405
F1-317
F1-312
F1-311
F1-310
F3E-406
3E
3F
3G
39A
39B
39C
8B
80
1984
10ST ST.
3
102
28
F-1
F-2
F-3
18D
"A" STREET E 35+00

GRID-3

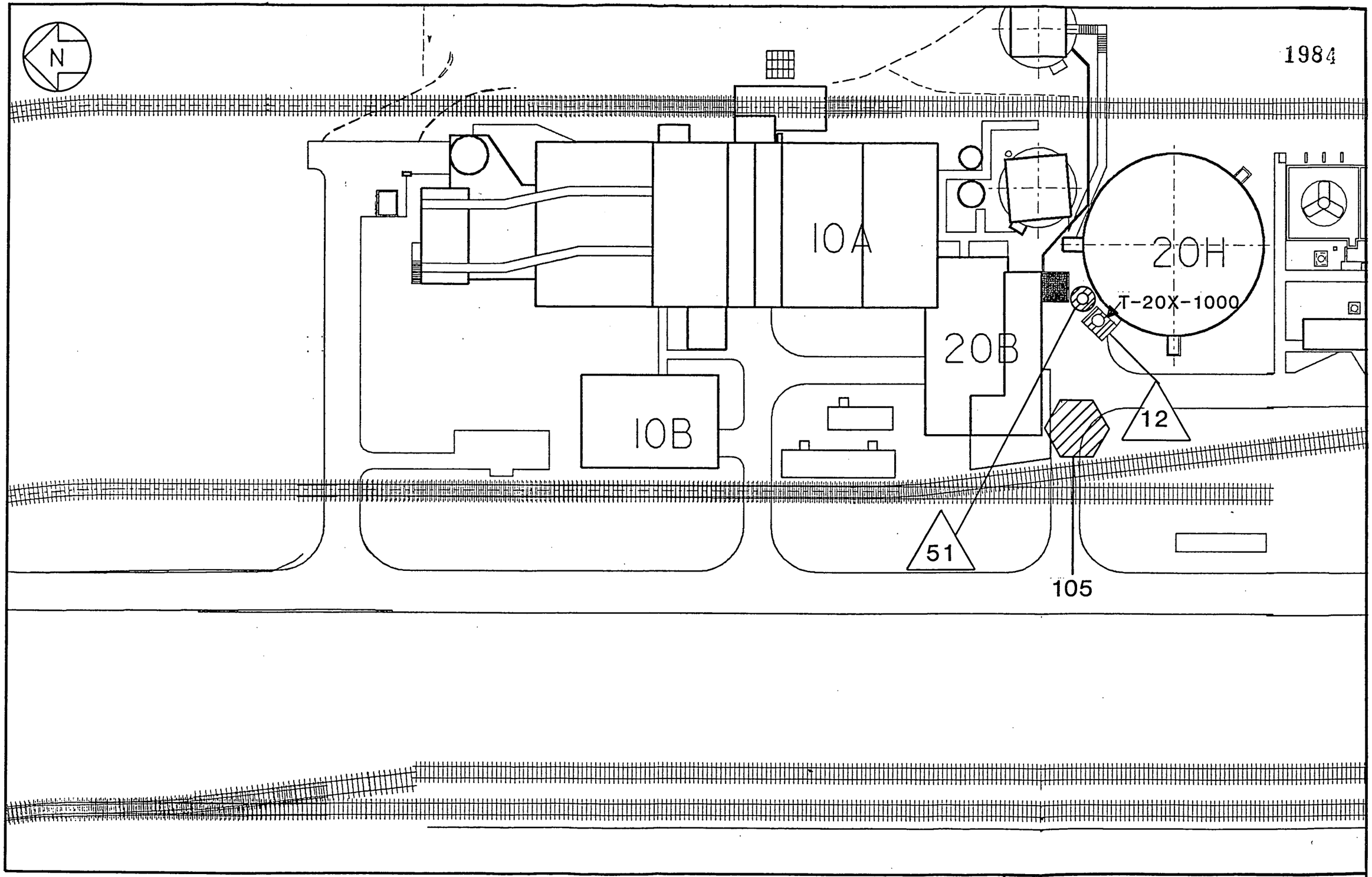

N
1984
F-54502
9
54B
37
54A
68
48
TANK-3
TANK-4
39D
39C
39B
39A
T-8
T-1
T-7
T-9
F1-5
TANK-1
TANK-2
W-10
13B
10B
19B
50
T-3
T-2
T-5
F-100
F-101
T-19X-3100
T-19X-3000
11
T-4
T-6
13C
20G
10A
107
53

GRID-4


"B" STREET E 42+00
N
1984
33A
33B
33C
33D
33E
F18-6A
F18-6B
T-18X-2900
103
T-18X-1100
T-18X-1000
T-18X-1300
T-18X-2500
T-18X-1500
F18E-2
F18E-3
F18-1
F18-2
F18-3
F2E-602
F2E-603
F3A-3
F1-613
F1-612
F1-610
F1-609
F1-608
F2E-601
2C
735-43-7020
735-43-7021
735-43-7004
8
F3E-222
F3E-223
F3E-225
F3E-224
36
3A
1
26
F3-19
F3-22
F3-24
F3-12
109
F3E-7
3B
D1-118
F3-23
F3-25
F3-27
3C
8A
8C
D3E-3
F3-2
D3E-1
3D
D3E-13
D3E-2
F3-11
2
2A
GRID-5
121


N
30A
1984
2ND STREET
17
F2E-502
F2E-501
F1-512
101
2A
38
TANK 13
6
17C
17B
17A
TANK 11
5A
5B
TANK 12
5
F1-26A
F1-25A
71
F2E-5 SE
30B
4
F2E-6 NE
F2E-8 SW
F2E-7 NW
2D

GRID-6



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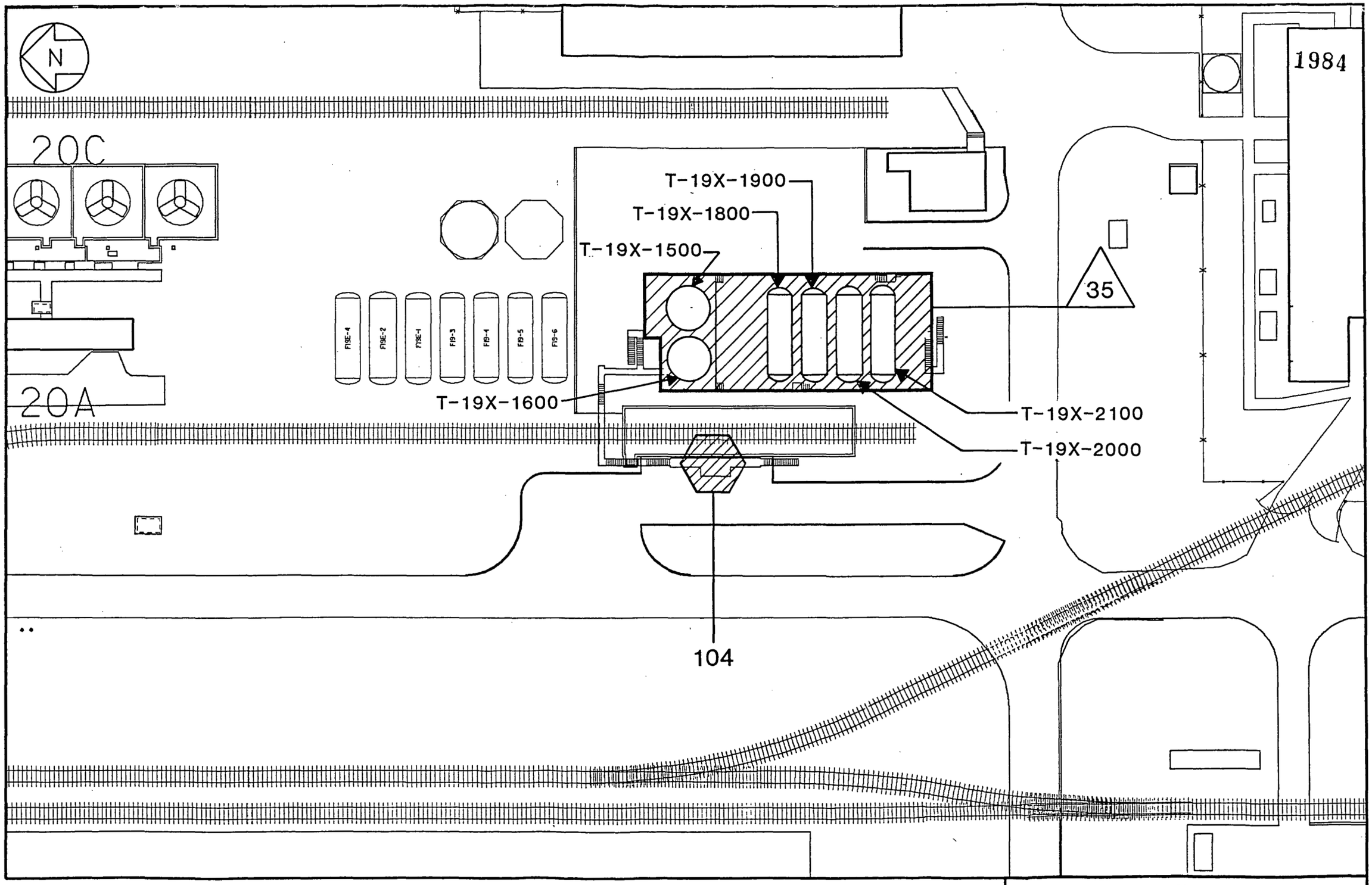
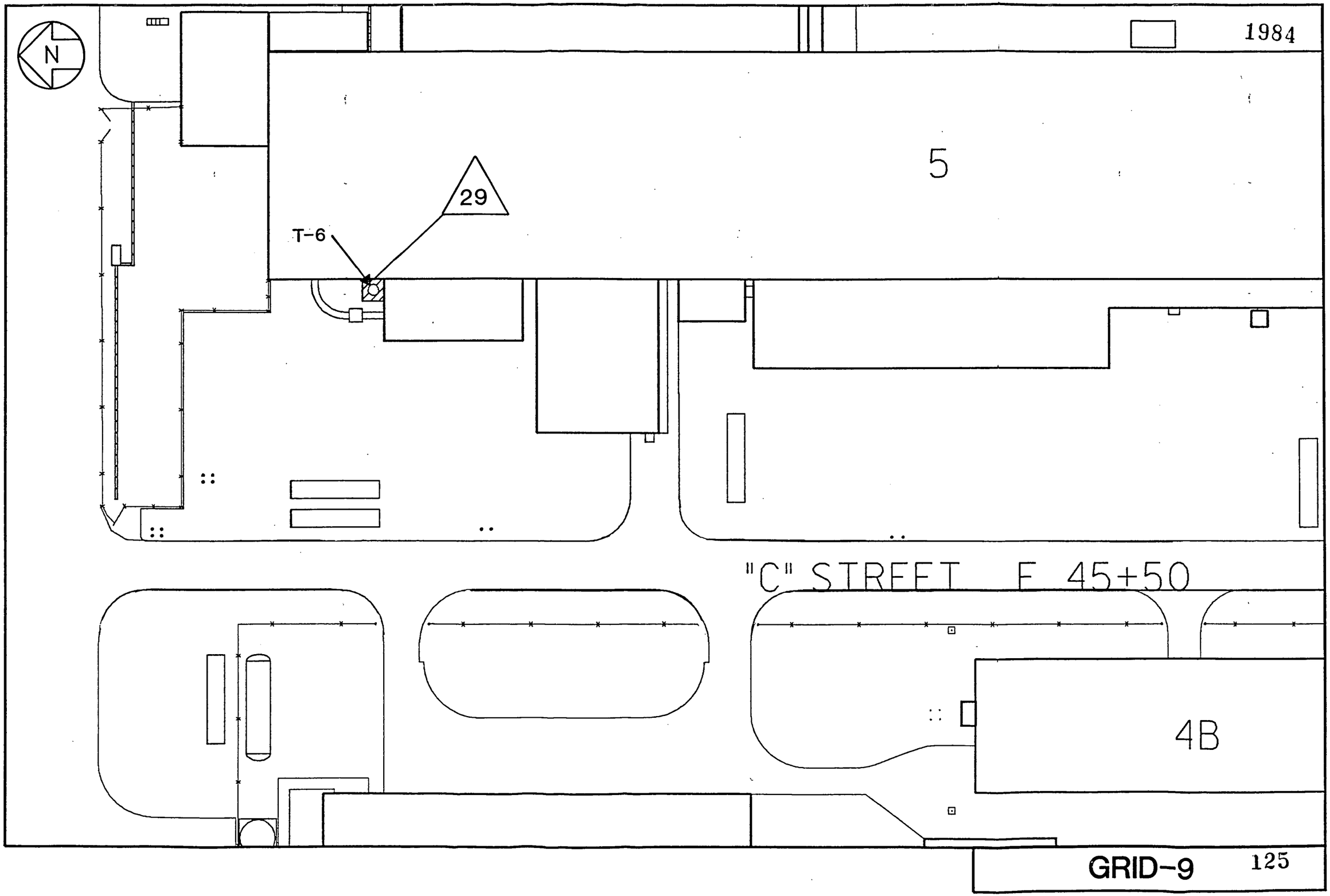
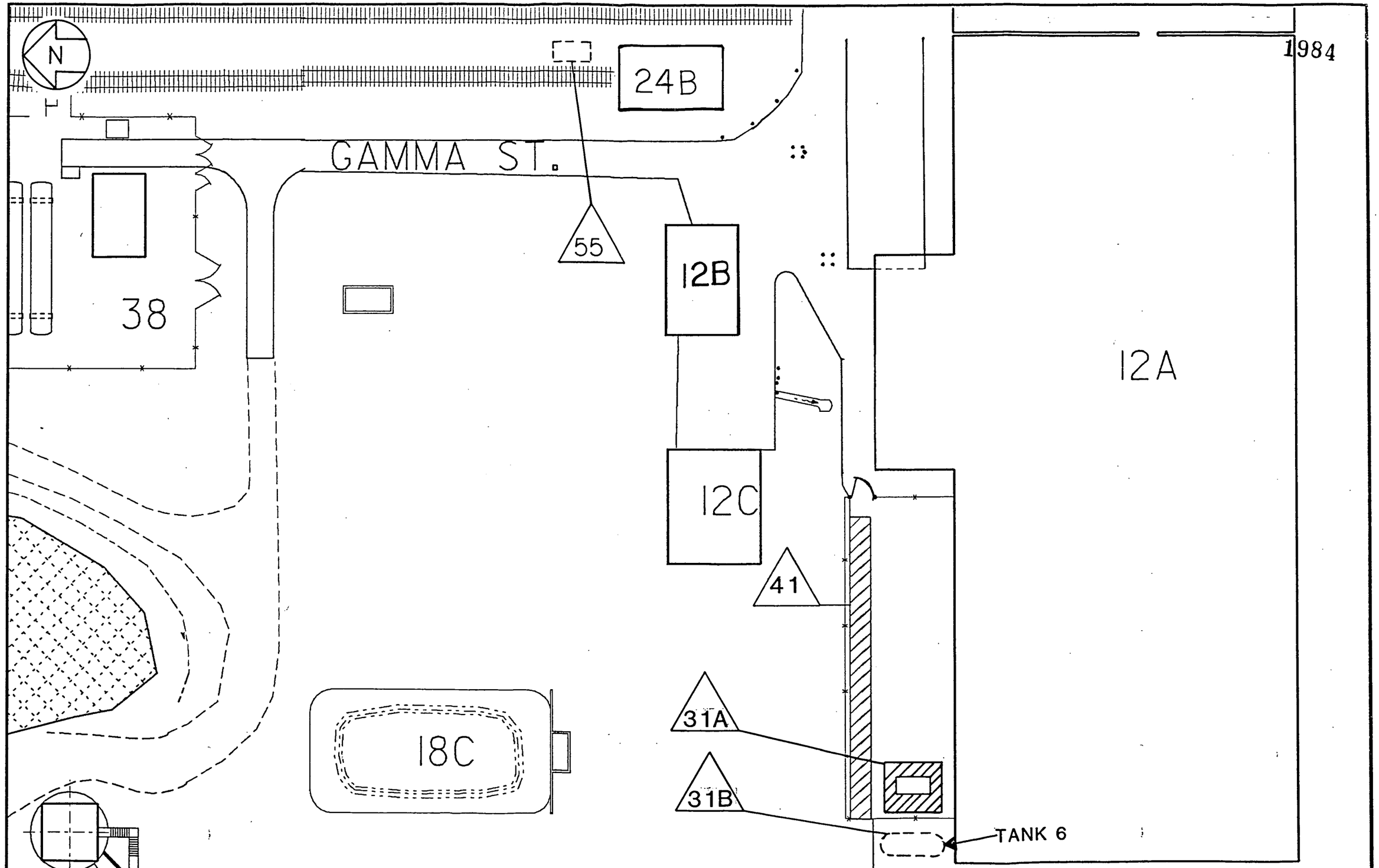

N
20C
20A
1984
T-19X-1900
T-19X-1800
T-19X-1500
T-19X-1600
T-19X-2100
T-19X-2000
35
104
F19E-4
F19E-2
F19E-1
F19-3
F19-4
F19-5
F19-6

GRID-8


N
1984
5
29
T-6
"C" STREET E 45+50
4B
GRID-9



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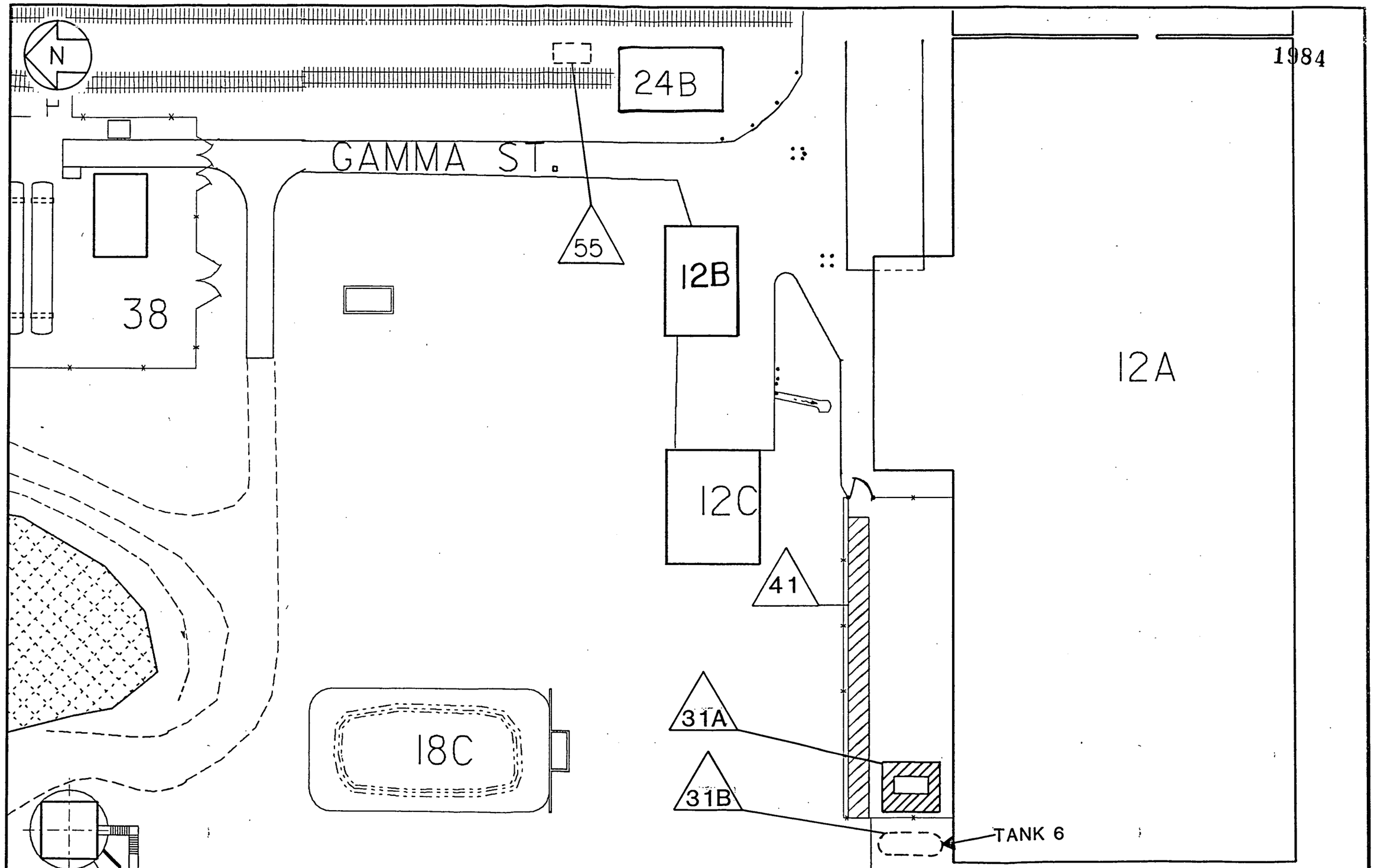

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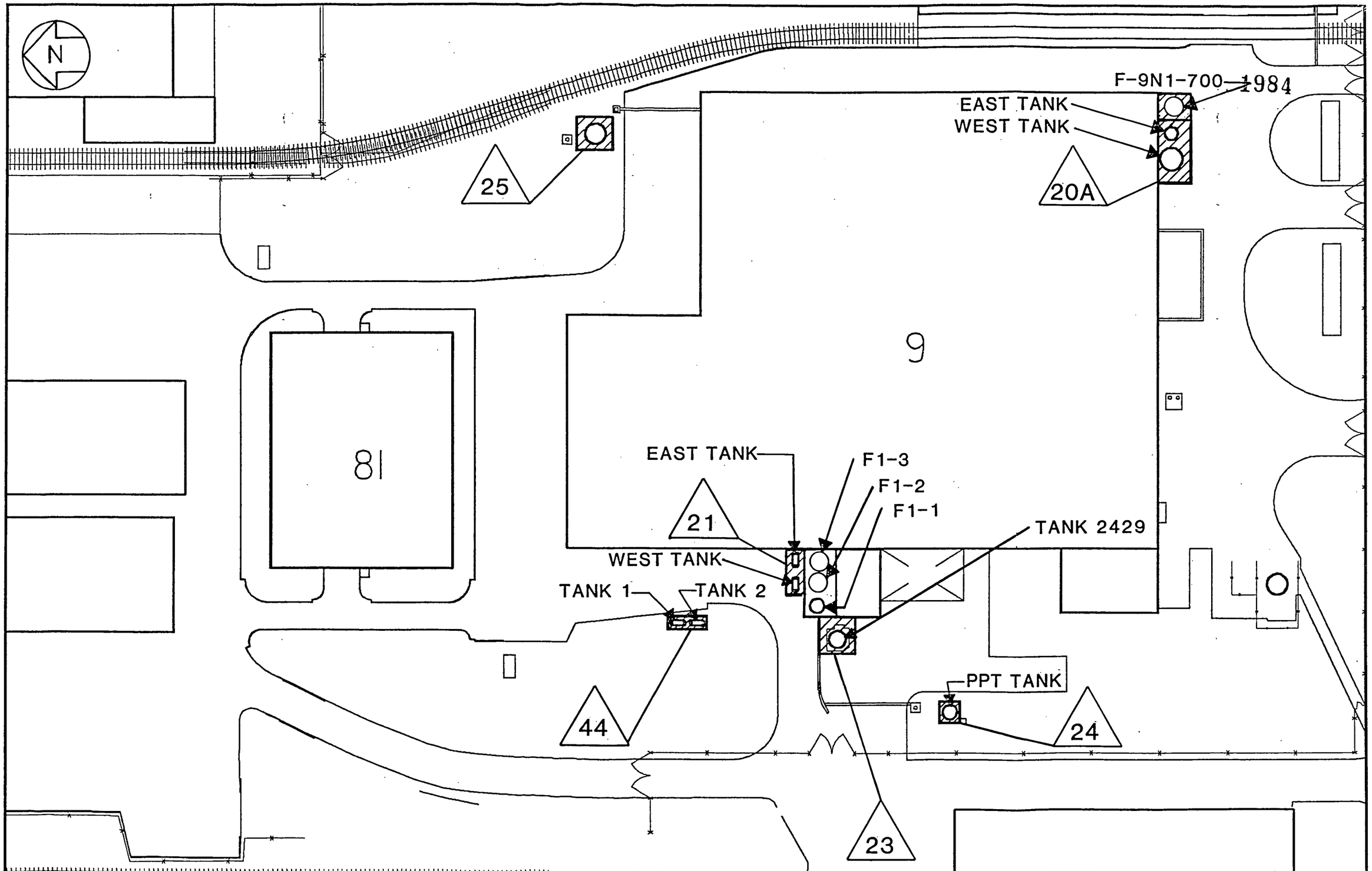
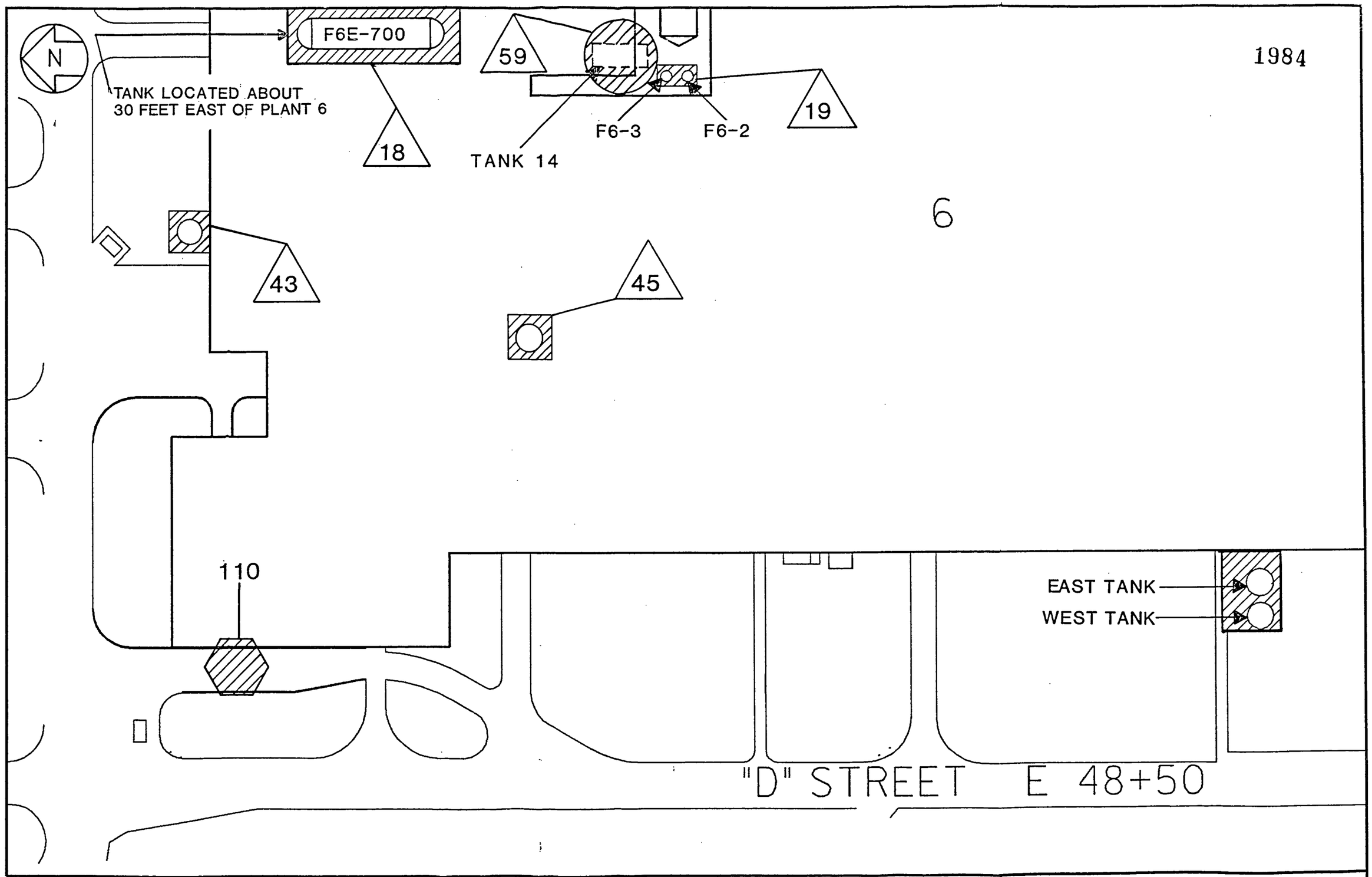
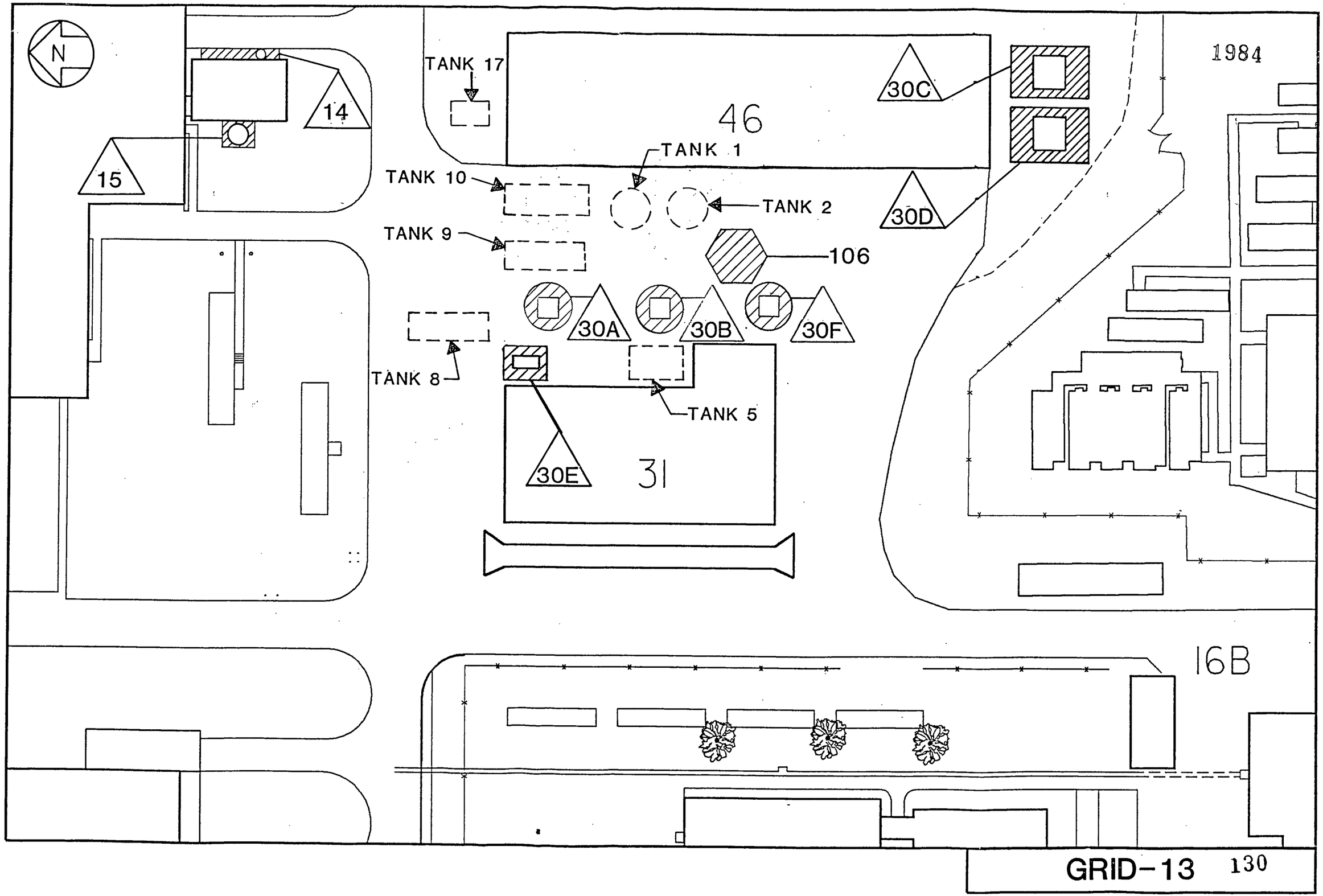
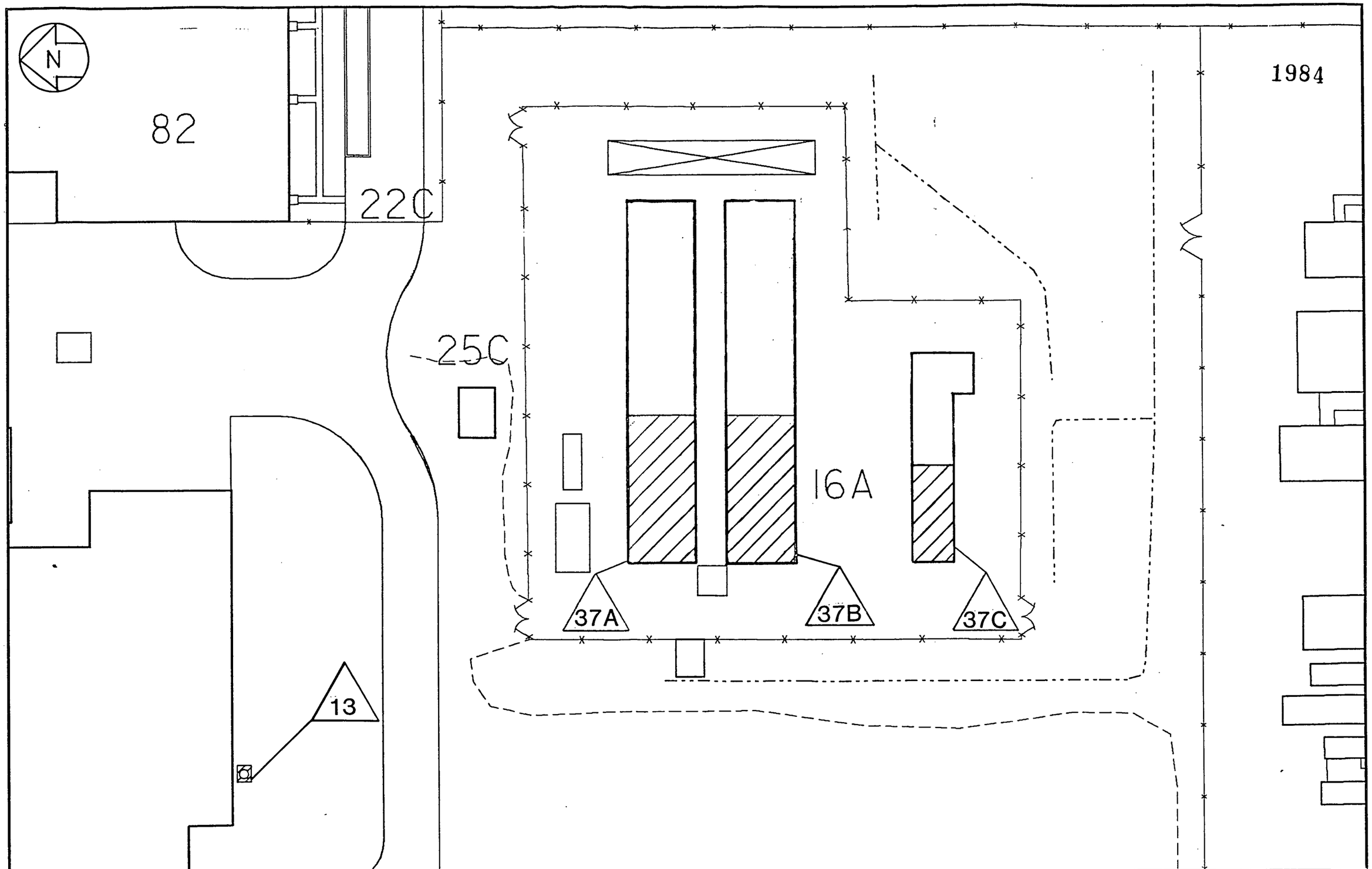

N
F-9N1-700-1984
EAST TANK
WEST TANK
20A
25
9
18
EAST TANK
F1-3
F1-2
F1-1
21
TANK 2429
WEST TANK
TANK 1
TANK 2
PPT TANK
44
24
23

GRID-11

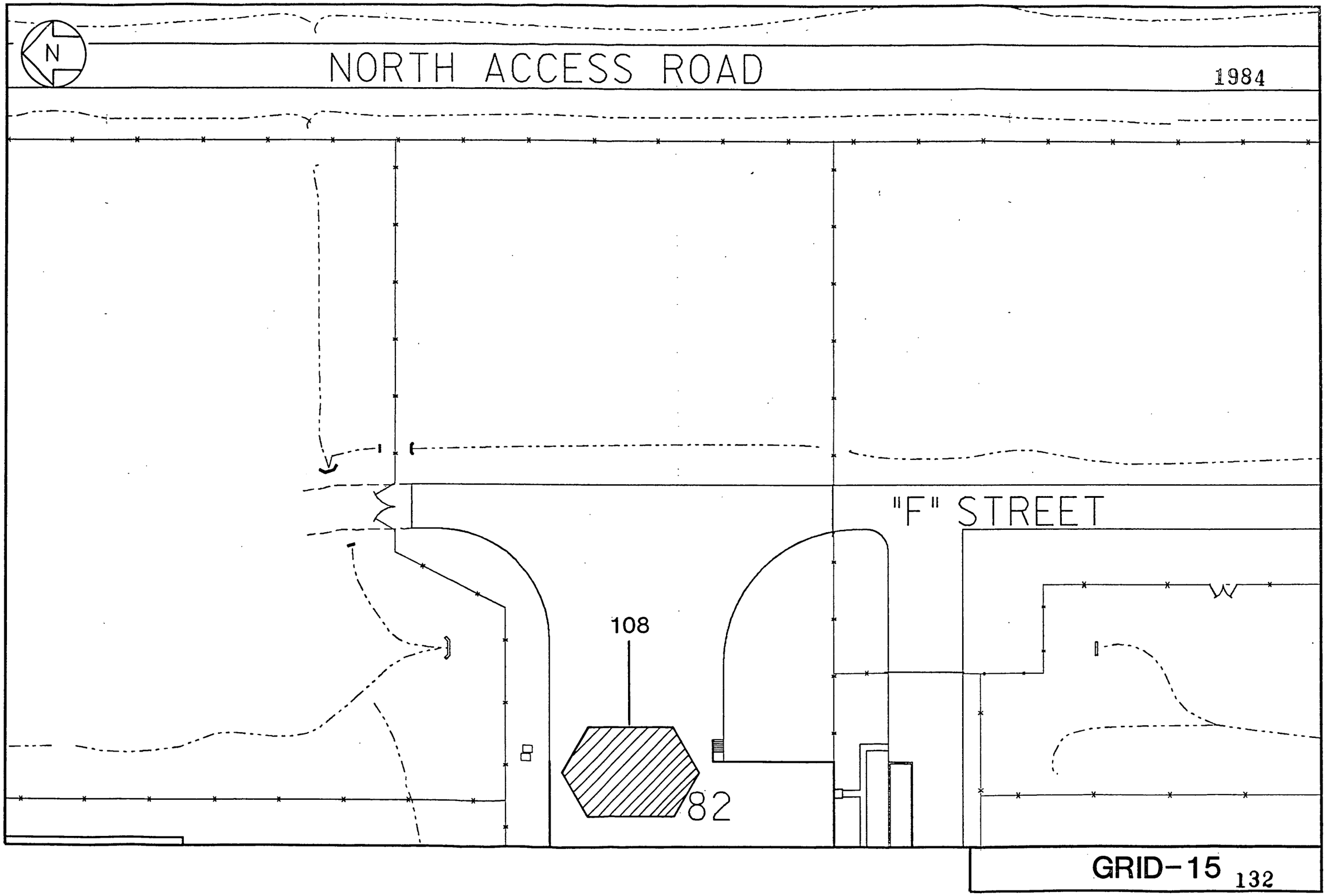

1984
N
F6E-700
TANK LOCATED ABOUT
30 FEET EAST OF PLANT 6
18
59
TANK 14
F6-3
F6-2
19
6
43
45
110
EAST TANK
WEST TANK
"D" STREET E 48+50

GRID-12


N
14
15
TANK 17
46
30C
1984
TANK 1
TANK 10
TANK 2
30D
TANK 9
106
30A
30B
30F
TANK 8
TANK 5
30E
31
16B
GRID-13



GRID-14


N
NORTH ACCESS ROAD
1984
"F" STREET
108
82
GRID-15

Appendix G
Travel Time
Estimates

APPENDIX G

TRAVEL TIME ESTIMATES
(Hydraulic Calculations)

APPENDIX G

TRAVEL TIME ESTIMATES

GENERAL:

Pipe flow calculations are based on Manning's Equation for pipes flowing full (Daugherty, 1977), and for partial flow conditions (SCS-NEH, 1972).

Manning's Equation for full flow conditions:

$$Q = (1.49/n)AR_h^{2/3}S^{1/2}$$

Where: Q = flow in cubic feet per second
A = cross sectional area (ft^2)
R_h = hydraulic radius (ft)
= area/wetted perimeter = D/4
S = hydraulic gradient (ft/ft)
n = Manning's roughness coefficient

Notes:

(1) Manning's "n" roughness coefficient of 0.013 was used for concrete and cast iron pipes.

(2) The Travel Time in a section of pipe or reach is the length divided by the calculated velocity.

(3) The maximum pipe velocity occurs at approximately 83% total depth and is approximated by 110% full flow velocity. This maximum velocity was used to calculate high flow travel times.

APPENDIX G

From Manhole 10 to Manhole 34

(Col.1) Pipe Dia. (in.)	(Col.2) Dist. (ft.)	(Col.3) Slope (%)	(Col.4) Full Flow (cfs)	(Col.5) Full Vel. (fps)	(Col.6)* Part. Flow (cfs)	(Col.7) Part. Vel. (fps)
30	280	.35	24.33	4.96	24.33	4.96
30	200	.35	24.33	4.96	24.33	4.96
30	120	.35	24.33	4.96	24.33	4.96
48	270	.29	77.56	6.17	24.80	4.64
54	315	.30	108.00	6.79	24.80	4.61
54	210	.29	106.00	6.68	24.80	4.56

High flow travel time = [Col.2/(1.10 X Col.5)]/60
= 3.68 minutes or 4 minutes

Low flow travel time = (Col.2/Col.7)/60
= 4.89 minutes or 5 minutes

From Catchbasin 10 to Manhole 34

(Col.1) Pipe Dia. (in.)	(Col.2) Dist. (ft.)	(Col.3) Slope (%)	(Col.4) Full Flow (cfs)	(Col.5) Full Vel. (fps)	(Col.6)* Part. Flow (cfs)	(Col.7) Part. Vel. (fps)
12	120	1.00	3.57	4.55	3.57	4.55
30	200	0.35	24.33	4.96	4.04	3.02
30	120	0.35	24.33	4.96	4.04	3.02
48	270	0.29	77.56	6.17	4.04	2.49
54	315	0.30	108.00	6.79	4.04	2.42
54	210	0.29	106.00	6.68	4.04	4.56

High flow travel time = [Col.2/(1.10 X Col.5)]/60
= 3.22 minutes or 3 minutes

Low flow travel time = (Col.2/Col.7)/60
= 6.95 minutes or 7 minutes

APPENDIX G

From Catchbasin 82 to Manhole 34

(Col.1) Pipe Dia. (in.)	(Col.2) Dist. (ft.)	(Col.3) Slope (%)	(Col.4) Full Flow (cfs)	(Col.5) Full Vel. (fps)	(Col.6)* Part. Flow (cfs)	(Col.7) Part. Vel. (fps)
18	40	.90	9.99	5.65	9.99	5.65
36	130	.13	24.11	3.41	10.46	2.80
36	170	.21	30.64	4.34	10.46	3.32
36	60	.29	36.01	5.09	10.46	3.72
48	270	.29	77.56	6.17	10.46	3.51
54	315	.30	108.00	6.79	10.46	3.43
54	210	.29	106.00	6.68	10.46	3.40

High flow travel time = [Col.2/(1.10 X Col.5)]/60
= 3.30 minutes or 3 minutes

Low flow travel time = (Col.2/Col.7)/60
= 5.82 minutes or 6 minutes

From Catchbasin 25 to Manhole 34

(Col.1) Pipe Dia. (in.)	(Col.2) Dist. (ft.)	(Col.3) Slope (%)	(Col.4) Full Flow (cfs)	(Col.5) Full Vel. (fps)	(Col.6)* Part. Flow (cfs)	(Col.7) Part. Vel. (fps)
10	40	1.00	2.19	4.02	2.19	4.02
36	140	0.22	31.37	4.44	2.66	2.14
48	270	0.29	77.56	6.17	2.66	2.13
54	315	0.30	108.00	6.79	2.66	2.07
54	210	0.29	106.00	6.68	2.66	2.05

High flow travel time = [Col.2/(1.10 X Col.5)]/60
= 2.47 minutes or 2 minutes

Low flow travel time = (Col.2/Col.7)/60
= 6.64 minutes or 7 minutes

APPENDIX G

From Catchbasin 100 to Manhole 34

(Col.1) Pipe Dia. (in.)	(Col.2) Dist. (ft.)	(Col.3) Slope (%)	(Col.4) Full Flow (cfs)	(Col.5) Full Vel. (fps)	(Col.6)* Part. Flow (cfs)	(Col.7) Part. Vel. (fps)
6	220	1.42	0.67	3.41	0.67	3.41
10	130	1.00	2.19	4.02	1.14	3.47
12	60	0.60	2.77	3.52	1.14	2.85
54	315	0.30	108.00	6.79	1.14	1.51
54	210	0.29	106.00	6.68	1.14	1.49

High flow travel time = [Col.2/(1.10 X Col.5)]/60
= 2.91 minutes or 3 minutes

Low flow travel time = (Col.2/Col.7)/60
= 7.88 minutes or 8 minutes

From Catchbasin 35 to Manhole 34

(Col.1) Pipe Dia. (in.)	(Col.2) Dist. (ft.)	(Col.3) Slope (%)	(Col.4) Full Flow (cfs)	(Col.5) Full Vel. (fps)	(Col.6)* Part. Flow (cfs)	(Col.7) Part. Vel. (fps)
10	20	1.00	2.19	4.02	2.19	4.02
24	120	0.45	15.21	4.84	2.66	3.01
24	385	0.78	20.03	6.38	2.66	3.60
30	100	0.35	24.33	4.96	2.66	2.62

High flow travel time = [Col.2/(1.10 X Col.5)]/60
= 1.68 minutes or 2 minutes

Low flow travel time = (Col.2/Col.7)/60
= 3.16 minutes or 3 minutes

* Column 6 partial flow is the peak flow the pipe receiving the spill could transport plus the average background flow added to the next pipe in the system that is large enough to carry the total flow. The average background flow of 0.47 cfs was obtained from NPDES monitoring data.

APPENDIX G

Flow from Manhole 34 to Manhole 175

See Section 5 for a description of low-flow and high-flow.

The pipe from MH 34 to MH 175 is 12 inch diameter and is approximately 2400 feet long.

Low Flow

500 gpm = 1.11 cfs
V = Q/A
V = 1.11 cfs/($(1^2)/4$)
V = 1.41 fps

Pipe Length = 2400 feet

T_t = 2400 feet/1.41 fps/60 sec/min.
T_t = 28.4 minutes

High Flow

Q = 1000 gpm = 2.23
V = Q/A
V = 2.23/[$(1^2)/4$]
V = 2.84 fps

Pipe Length = 2400 feet

T_t = 2400 feet/2.84 fps/60 sec/min.
T_t = 14.1 minutes

Flow from Manhole 175 to outfall Great Miami River

See Section 5 for a description of low-flow and high-flow.

The 16 inch outfall line from MH 175 to the Great Miami River is approximately 4150 feet long. It consists of several segments of different slopes. All segments would have different travel times and are calculated as such. Manning's equation, as previously identified, was utilized for full flow calculations and for partial flow conditions SCS-NEH, 1972.

Low Flow = 650 gpm = 1.45 cfs
High Flow = 1150 gpm = 2.56 cfs

APPENDIX G

Pipe Seg	Length* (feet)	Slope* (%)	Travel Time (min) Full Flow (calculated)	Low Flow (1.45 cfs) V (ft/sec)	Low Flow (1.45 cfs) t (min)	High Flow (2.56 cfs) V (ft/sec)	High Flow (2.56 cfs) t (min)
1)	528	1.00	7.69	3.53	2.49	4.24	2.07
2)	227	0.24	3.77	2.13	1.77	2.48	1.52
3)	255	6.44	19.52	6.64	0.64	7.83	0.54
4)	530	0.57	5.81	2.91	3.03	3.37	2.62
5)	278	1.29	8.74	3.82	1.21	4.57	1.01
6)	2328		5.44	2.77	14.01	3.20	12.13
Total	4146	N/A	N/A	N/A	23.15	N/A	19.89

The Total Travel Time from Manhole 34 to the Great Miami River is:

Low Flow : 28.4 + 23.15 = 51.55 minutes

High Flow : 14.1 + 19.89 = 33.99 minutes

*The run and profile of the segments of the outfall from MH-175 to the Great Miami River are taken from FMPC drawing number 3025-H-51-A, "Profile of Outfall Sewer".

APPENDIX H

UPGRADE OF SECONDARY CONTAINMENT SYSTEMS

ATTACHMENT 1

NO-METALS PRODUCTION SECONDARY CONTAINMENT UPGRADE SCENARIO

Attachment 1 is a listing of the Action Items (or work) that will be needed under the No-Metals Production Scenario to comply with the secondary containment guidelines in the Code of Federal Regulations (CFR) Title 40, Part 112. This will include upgrading of the secondary containment systems (including loading/unloading facilities) at Plant 2/3, Plant 8, and the FMPC support services facilities (Biodenitrification Facility, Water Treatment, Maintenance, etc.). The other areas will not be upgraded but will be placed in a visibly nonuseable condition. Placing these areas in a visibly nonuseable condition will involve removing flanged spool pieces of piping from the pipelines connecting to the tanks and blind flanging both remaining open flanges; or removing a two (2) foot section of piping connecting to the tanks, blind flanging the tank nozzle and capping off the remaining end-of-pipe. This is deemed necessary so that it can be visually verified that the tank cannot be filled using existing pipelines. Also, the existing lower-most outlet nozzle or drain port will be left open (including removing any existing valve) so that it can be visually verified that the tank is empty. The tank will also be marked "In Standby" and placed on the excess equipment list. For convenience, the tanks have been organized into groups based on the scope of work proposed to bring each specific grouping into compliance with the guidelines. These group listings do not identify the type of secondary containment system being referenced.

Appendix F of the amended FMPC SPCC Plan presents grid plates that show the specific locations of the systems that are listed in Attachments 1 and 2. The specific grid plate for each tank is indicated (in parenthesis) in the column entitled "Location File Number".

ATTACHMENT 1

NO-METALS PRODUCTION SECONDARY CONTAINMENT UPGRADE SCENARIO

Building Number	Locator File Number	Scope Of Required Work For Full Compliance
STORAGE TANK AREAS		
Group I		
Pilot Plant	11 (G-4)	1) Increase the height of the existing containment to provide for full secondary containment capacity for the largest tank in the area plus freeboard to allow for precipitation. 2) Seal any cracks in the existing containment dikes and floor.
General Sump	33B (G-5)	
General Sump	33D (G-5)	
Refinery Sump	36 (G-5)	
*Administration Bldg.	41 (N/A)	
Water Treatment	12 (G-7)	
*HS&P Building	49 (N/A)	
Group II		
*Garage	30A (G-13)	1) Provide a new permanent concrete secondary containment area. The present secondary containment system is a steel swimming pool. Else, replace the aboveground storage tank with a new underground storage tank which has dual inner liners to provide secondary containment and which will also include other safety features to prevent a spill. 2) In the near term, replace swimming pool secondary containment system drain valve with a valve capable of being locked shut so that the valve can only be opened by an authorized individual, and marked so that it can be visually noted that the valve is closed.
*Garage	30B (G-13)	
*Garage	30C (G-13)	
*Garage	30D (G-13)	
*Garage	30E (G-13)	
Group III		
*Pilot Plant	53 (G-4)	1) Provide a new permanent concrete secondary containment area. The present secondary system is a steel swimming pool. 2) In the near term, replace swimming pool secondary containment system drain valve with a valve capable of being locked shut so that the valve can only be opened by an authorized individual, and marked so that it can be visually noted that the valve is closed.
Group IV		
*Maintenance Shops	41 (G-10)	1) Provide a new permanent secondary containment area. At the present time there is no secondary containment for this area.

ATTACHMENT 1

NO-METALS PRODUCTION SECONDARY CONTAINMENT UPGRADE SCENARIO

Building Number	Locator File Number	Scope Of Required Work For Full Compliance
Group V		
Plant 5	29 (G-9)	1) The inlet and outlet process lines for the tank(s) in this area will be disconnected (by removing the flanged spool pieces of piping from the connecting tanks and blind flanging both remaining open flanges) so that nothing (no CWA Hazardous Substance or oil) can be put into this tank.
Plant 6	13 (G-14)	
Plant 6	19 (G-12)	
Plant 6	43 (G-12)	
Plant 9	23 (G-11)	
Pilot Plant	9 (G-4)	2) The tank(s) in this secondary containment area will be placed on the excess equipment list and marked "In Standby".
Pilot Plant	39A (G-4)	
Pilot Plant	39B (G-4)	3) The secondary containment system for this area will not to be upgraded.
Group VI		
*Plant 6	14 (G-13)	1) The tank in this area has been temporally removed and the process lines disconnected. This tank will not be reinstalled, but will be placed on the excess equipment list.
*Plant 6	15 (G-13)	
		2) The secondary containment system for this area will not to be upgraded.
Group VII		
Plant 6	45 (G-12)	1) Remove any substance remaining in the tank using proper procedures and then send the tank to decontamination.
Plant 9	21 (G-11)	
Plant 9	44 (G-11)	2) The tank in this containment system will be placed on the excess equipment list.
Pilot Plant	48 (G-4)	
		3) The secondary containment system for this area will not be upgraded or none will be provided.

ATTACHMENT 1

NO-METALS PRODUCTION SECONDARY CONTAINMENT UPGRADE SCENARIO

Building Number	Locator File Number	Scope Of Required Work For Full Compliance
UNDERGROUND STORAGE TANKS		
Group VIII		
*Plant 1 Truck Dock	38 (G-6)	1) Replace the existing underground storage tank with a new underground storage tank which has dual liners to provide secondary containment and which will also include safety features to prevent a spill. 2) Else, remove the existing underground storage tank from service and remove this tank from this area after all applicable permits have been obtained.
*Plant 1 Truck Dock	38 (G-6)	
*Plant 1 Truck Dock	38 (G-6)	
*Plant 6	59 (G-12)	
*Maintenance Shops	31B (G-10)	
*Garage	30 (G-13)	
*Garage	30 (G-13)	
*Railroad Eng. House	55 (G-10)	
Group IX		
*Garage	30 (G-13)	1) These tanks are no longer in service and are being removed as part of the UST Project.
*Garage	30 (G-13)	
*Garage	30 (G-13)	
*Garage	30 (G-13)	
*Garage	30 (G-13)	
LOADING AND UNLOADING FACILITIES		
Group X		
*North Of Plant 1 Pad	100 (G-1)	1) Relocate gasoline Tanks 1 and 2 from this area to the Garage area and consolidate into one Loading and Unloading Facility at Station Number 106 (G-13)
Group XI		
Plant 2/3 Refinery	109 (G-5)	1) Remove this area from service as a Loading and Unloading Facility. Provide new piping, level controls, etc. so that the CWA hazardous substances that are now being handled in this area will be loaded and unloaded at Plant 2/3's Loading and Unloading Station Number 101 (G-6).

ATTACHMENT 1

NO-METALS PRODUCTION SECONDARY CONTAINMENT UPGRADE SCENARIO

Building Number	Locator File Number	Scope Of Required Work For Full Compliance
<u>Category XII</u>		
*Plant 2/3 Refinery	101 (G-6)	1) Needs to provide new secondary containment areas as none presently exist.
BDN Facility	102 (G-3)	
Plant 8 Recovery	103 (G-5)	2) Include appropriate safety features for the storage tanks in this common area.
Water Treatment	105 (G-7)	
*Garage	106 (G-13)	

* Tank(s) regulated under 40 CFR, Part 112

ATTACHMENT 2

FULL PRODUCTION SECONDARY CONTAINMENT UPGRADE SCENARIO

Attachment 2 is a listing of the Action Items (or work) that will be needed under the Full Metals Production Scenario to comply with the guidelines in the Code of Federal Regulations (CFR) Title 40, Part 112. This will include upgrading of the secondary containment systems (including loading/unloading facilities) at Plant 2/3, Plant 8, and the FMPC support services facilities (Biodenitrification Facility, Water Treatment, Maintenance, etc.). For convenience, the tanks have been organized into groups based on the scope of work proposed to bring each specific grouping into compliance with the guidelines. These group listings do not identify the type of secondary containment system being referenced.

Appendix F of the amended FMPC SPCC Plan presents grid plates that show the specific locations of the systems that are listed in Attachments 1 and 2. The specific grid plate for each tank is indicated (in parenthesis) in the column entitled "Location File Number".

ATTACHMENT 2

FULL PRODUCTION SECONDARY CONTAINMENT UPGRADES SCENARIO

Building Number	Locator File Number	Scope Of Required Work For Full Compliance
STORAGE TANK AREAS		
Group I		
Plant 5	29 (G-9)	1) Increase the height of the existing secondary containment to provide for full capacity for the largest tank in the area plus free board to allow for precipitation. 2) Seal any cracks in the existing containment dikes and floor.
Plant 6	13 (G-14)	
*Plant 6	14 (G-13)	
*Plant 6	15 (G-13)	
Plant 6	19 (G-12)	
Plant 6	43 (G-12)	
Plant 9	21 (G-11)	
Plant 9	23 (G-11)	
Plant 9	44 (G-11)	
Pilot Plant	9 (G-4)	
Pilot Plant	11 (G-4)	
Pilot Plant	39A (G-4)	
Pilot Plant	39B (G-4)	
Pilot Plant	48 (G-4)	
General Sump	33B (G-5)	
General Sump	33D (G-5)	
Refinery Sump	36 (G-5)	
*Administration Bldg.	41 (N/A)	
Water Treatment	12 (G-7)	
*HS&P Building	49 (N/A)	
Group II		
*Garage	30A (G-13)	1) Provide a new permanent concrete secondary containment area. The present secondary containment system is a steel swimming pool. Else, replace the aboveground storage tank with a new underground storage tank which has dual liners to provide secondary containment and which will also include other safety features to prevent a spill. 2) In the near term, replace swimming pool secondary containment system drain valve with a valve capable of being locked shut so that the valve can only be opened by an authorized individual, and marked so that it can be visually noted that the valve is closed.
*Garage	30B (G-13)	
*Garage	30C (G-13)	
*Garage	30D (G-13)	
*Garage	30E (G-13)	

ATTACHMENT 2

FULL PRODUCTION SECONDARY CONTAINMENT UPGRADES SCENARIO

Building Number	Locator File Number	Scope Of Required Work For Full Compliance
Group III		
*Pilot Plant	53 (G-4)	1) Provide a new permanent concrete secondary containment area. The present secondary system is a steel swimming pool. In the mean time, a drainage system for the swimming pool secondary containment system needs to be provide with a valve capable of being locked shut so that the valve can be only opened by an authorized individual, and it can be visually verified by a quick inspection that this valve is closed.
Group IV		
*Maintenance Shops	41 (G-10)	1) Provide a new permanent secondary containment area. At the present time there is no secondary containment system for this area.
Category V		
Plant 6	45 (G-12)	1) Remove any material remaining in the tank using proper procedures and then send the tank to decontamination.
Plant 9	21 (G-11)	
Plant 9	44 (G-11)	2) The tank in this containment system will be placed on the excess equipment list.
UNDERGROUND STORAGE TANKS		
Group VI		
*Plant 1 Truck Dock	38 (G-6)	1) Replace the existing underground storage tank with a new underground storage tank which has dual liners to provide secondary containment and which will also include safety features to prevent a spill.
*Plant 1 Truck Dock	38 (G-6)	
*Plant 1 Truck Dock	38 (G-6)	
*Plant 6	59 (G-14)	
*Maintenance Shops	31B (G-10)	2) Else, remove the existing underground storage tank from service and remove this tank from this area after all applicable permits have been obtained.
*Garage	30 (G-13)	
*Garage	30 (G-13)	
*Railroad Eng. House	55 (G-10)	

ATTACHMENT 2

FULL PRODUCTION SECONDARY CONTAINMENT UPGRADES SCENARIO

Building Number	Locator File Number	Scope Of Required Work For Full Compliance
Group VII		
*Garage	30 (G-13)	1) These tanks are no longer in service and are being removed as part of the UST Project.
*Garage	30 (G-13)	
*Garage	30 (G-13)	
*Garage	30 (G-13)	
*Garage	30 (G-13)	
LOADING AND UNLOADING FACILITIES		
Group VIII		
*North of Plant 1 Pad	100 (G-1)	1) Should be consolidated into one Loading and Unloading Facility which will be located at the Garage or combined with Loading and Unloading Station Number 106 (G-13). This means removing the tanks that are now located at this location from this area completely.
Group IX		
Plant 2/3 Refinery	109 (G-5)	1) Remove this area from service as a Loading and Unloading Facility. Provide new piping, level controls, etc. so that the CWA hazardous substances that are now being handled in this area will be loaded and unloaded at Plant 2/3's Loading and Unloading Station Number 101 (G-6).
Group X		
*Plant 2/3 Refinery	101 (G-6)	1) Needs to provide new secondary containment areas as none presently exist.
BDN Facility	102 (G-3)	
Plant 8 Recovery	103 (G-5)	2) Include appropriate safety features for the storage tanks in this common area.
Water Treatment	105 (G-7)	
*Garage	106 (G-13)	

*Tank(s) regulated under 40 CFR, Part 112